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# CAMBRIDGE GEOGRAPHICAL TEXT BOOKS

GENERAL EDITOR: G. F. BOSWORTH, F.R.G.S.

SENIOR

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# CAMBRIDGE GEOGRAPHICAL TEXT BOOKS

SENIOR

BY.

G. F. BOSWORTH, F.R.G.S.

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## EDITOR'S NOTE

THIS Senior Book, the third of a series of Geographical text-books on the concentric system, covers the ground for most of the examinations for pupils in the higher forms of central and secondary schools.

Throughout the book much attention is given to the physiography of each region or country and to the climatic conditions as affecting the productions of particular areas. In this connexion the maps showing the isotherms and special features relating to the winds and rainfall will be of much assistance to the student. The numerous pictures illustrate the scenery, the vegetable and animal life, and the industries of various countries. The history of the people has been considered largely from the geographical standpoint, while the industries are associated with the natural advantages of a particular region. The statistics are based on the latest available returns and the political information is the best that could be obtained. The Editor would specially emphasise the necessity of using this book with a good atlas, and he would direct attention to the paragraph on Topographical Maps on p. 31. The numerous questions and exercises, carefully selected from recent examination papers and compiled from the text of the book, should

prove of real value to teachers when giving home-work or setting tests at the end of a term.

The first four chapters are by Mr A. R. Hinks, F.R.S., to whom the Editor is much indebted for this valuable contribution.

G. F. B.

*March, 1922*

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## CHAPTER I

### THE SHAPE AND SIZE OF THE EARTH

It is easy to show that the surface of the sea is not flat, but curved. A distant ship may appear "hull down": that is to say, while the masts and spars are distinctly visible, the hull of the ship may be hidden from sight by the intervening surface of the sea. If the observer can climb higher than he was at first, the hull of the ship will come gradually into view; while if he descends, more of the ship's masts become hidden. Such an effect can be produced only by the curvature of the surface of the sea.

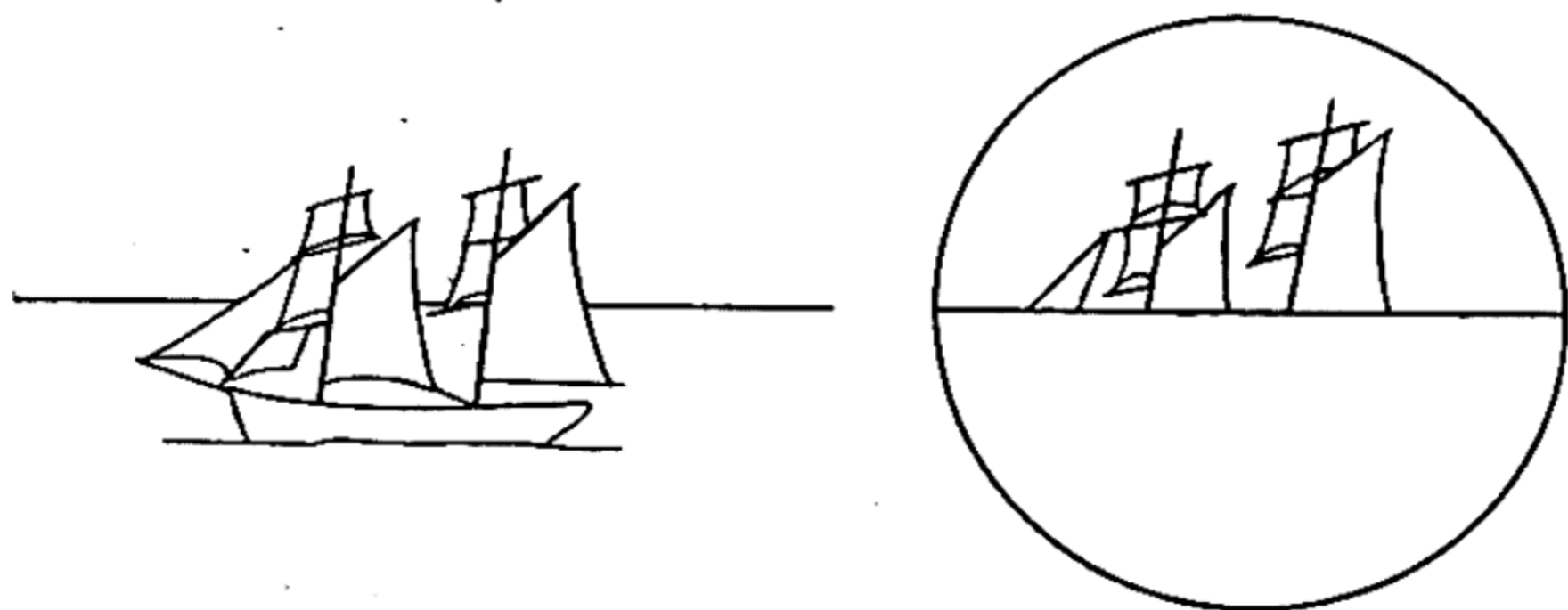


Fig. 1.

The same thing can be seen even better when it is possible to look across the sea to lights upon an opposite coast. By climbing up and down a cliff path it is often possible to find a position from which the distant lights are clearly visible when one stands up, and disappear when one stoops. This striking effect may be seen very well at Hunstanton, looking across the Wash to the lights of Skegness.

In all parts of the world the same effect is to be seen, and the effect is of the same amount, so far as one can judge. It is therefore evident to anyone that the surface of the sea is curved to roughly the same extent all over the world ; and that the shape of the world is, roughly, a sphere. Its precise shape can be measured only with the instruments of the astronomer and the surveyor.

The extremely precise survey which is required for this purpose is called Geodetic Survey.

### **Revolution and Rotation of the Earth.**

The daily revolution of the sun, and the nightly revolution of the stars, make it evident that either they are moving round the earth, or the earth is turning round beneath them. Until the time of Copernicus the former explanation was generally held to be the true one, though there had been astronomers and mathematicians in ancient times who taught the latter. Copernicus was the first man who thought out the matter fully, and showed that it was much more simple to explain the movements of the sun and the planets by supposing that the earth is a planet, and that with the other planets it moves round the sun, while turning all the time on its own axis. The movement of the earth or a planet round the sun is called its revolution; the spinning on its axis is called rotation ; and we must be careful to distinguish between the two motions.

There are several experiments which show that the earth has rotation ; but to explain them fully would occupy too large a space in this book. The best assurance that the theory of the rotation and revolution of the earth is true is to be found in the fact that the whole of astronomy, of surveying, of the theory of the tides, and of the circulation of the winds, is founded upon this theory ; and that nothing is ever discovered to contradict it in any particular. When one finds that a simple theory can explain everything that is observed, and that there is no single fact contradicting

it, one has the best possible reason for believing that the theory is true.

### The Poles of the Earth and the Sky.

The earth, then, is a nearly spherical body spinning on an axis. This axis is not quite fixed in the earth, but it varies so very little that we shall speak of it as if it were fixed. It varies indeed so little that the

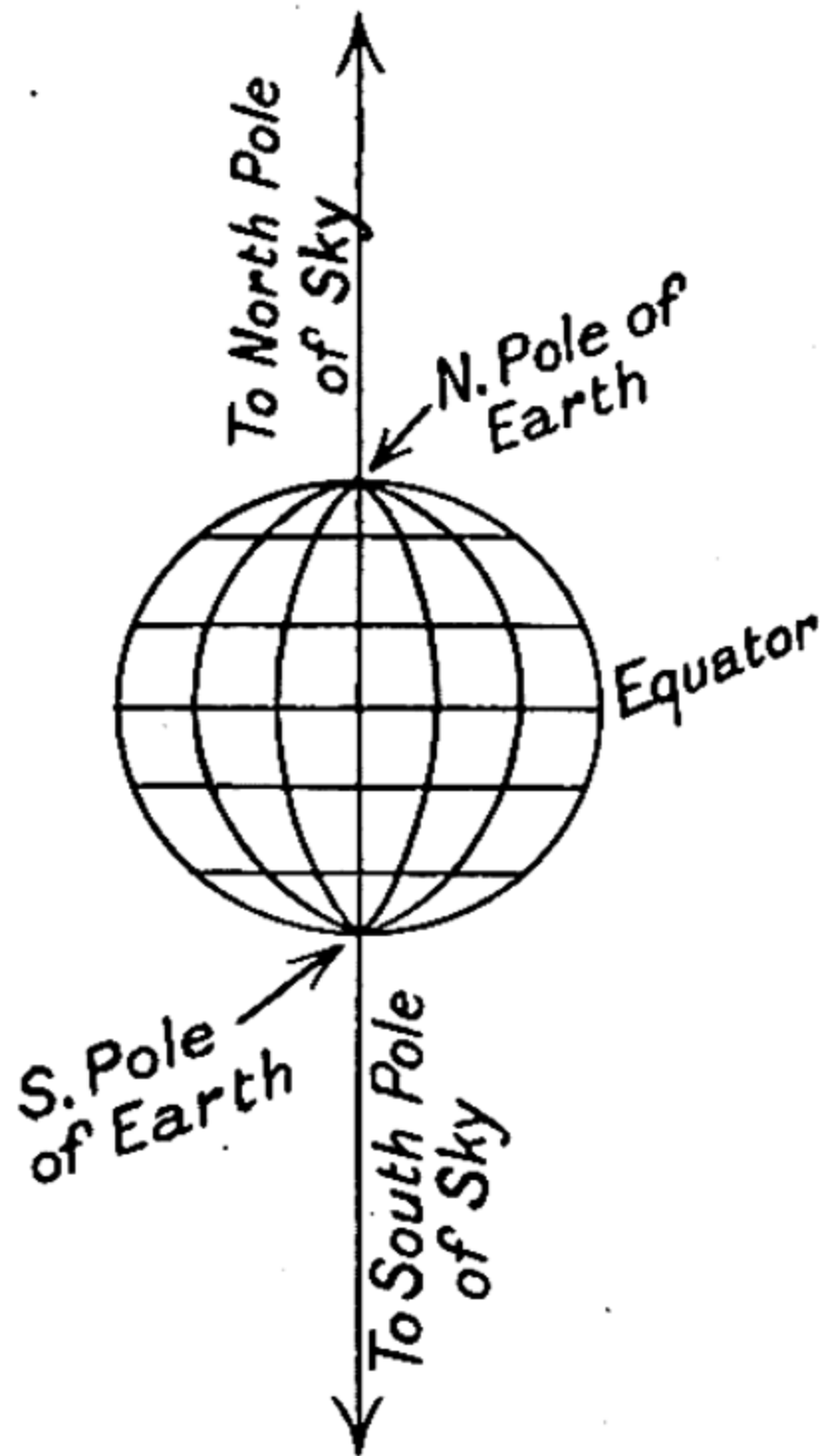


Fig. 2.

most refined observations of astronomers were not able to show that it varied at all until about twenty years ago. The points on the earth's surface where the axis cuts it, or comes out, are the north and south poles of the earth; and if we imagine the axis produced ever so far both ways, to the stars, it marks the north and south poles of the sky.

The apparent movements of the stars are due to the actual rotation of the earth ; and it is evident that if a star lay precisely on the line of rotation, that is to say, at one or other of the poles of the sky, it would not appear to move at all. There is no star precisely at either pole, but there is a bright star not very far from the northern pole of the sky, which serves very well as the Pole Star. Since it is not quite at the pole, it is not quite fixed, but moves in a small circle about five times the apparent diameter of the moon. By observing this and other stars it is a simple matter for the astronomer or surveyor to determine the position of the pole of the sky, and its height above the horizon.

We speak here of the pole, and not of the poles, because only one is visible in any one place on the earth. At any point of the earth's surface half-way between the two poles—that is to say, at any point of the equator—the northern pole of the sky is on the northern horizon, and the southern pole on the southern horizon. As one goes north, the northern pole rises ; until if one goes to the north pole of the earth the north pole of the sky is directly overhead. And similarly if one goes south from the equator, the southern pole of the sky gets higher and higher above the southern horizon.

### Latitude.

It is clear, then, that one may measure how far one has gone due north or south from the equator by measuring the elevation of the pole. This is done by instruments such as the theodolite of the surveyor, or the sextant of the sailor. And the observation is not restricted to stars near the pole, but may be made on the Sun or any star at suitable times. The angle of elevation of the pole of the sky is called the latitude of the place. Thus the latitude of the Equator is  $0^\circ$ , and latitude increases north and south until at the Poles of the earth it is  $90^\circ$ .

Now the observation of latitude enables the sur-

veyor to measure the size and the shape of the earth. First let us consider the shape. By careful survey it is found that at the equator one has to go 68·70 miles north to raise the pole one degree; while in latitude  $60^\circ$  one has to go 69·23 miles; and if it were possible to conduct survey operations at the pole itself it would be found that one degree of latitude is equivalent to 69·41 miles. These results show that the earth is not

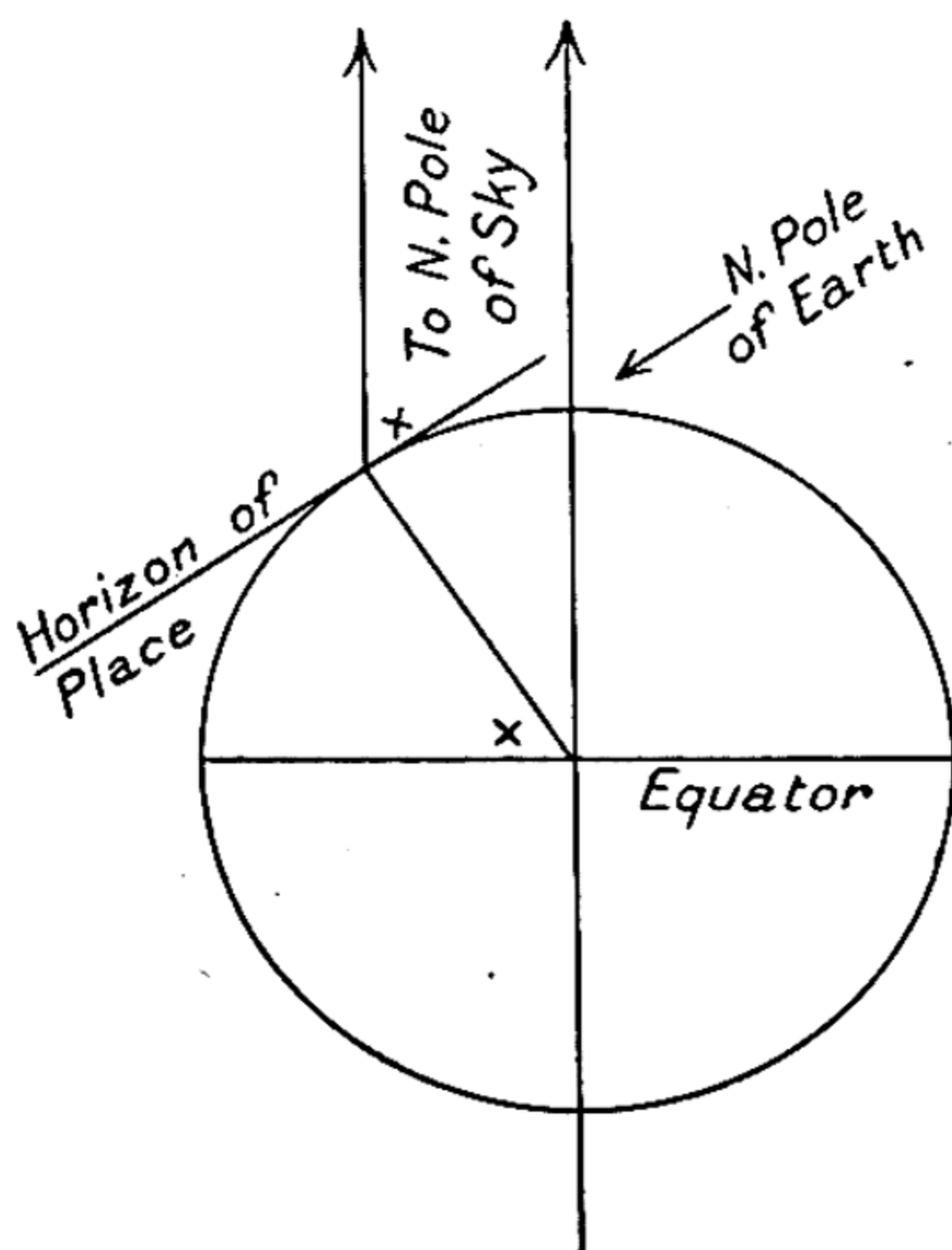


Fig. 3. Angles marked thus  $\times$  each equal latitude of place : angular distance from equator = elevation of pole.

a perfect sphere, but a spheroid. The polar diameter is slightly less—about one part in three hundred less—than the equatorial diameter. This bulging at the equator and flattening at the poles is a consequence of the rotation of the earth on its axis.

Measurements of this kind made in different parts of the world give very nearly the same result for the

shape of the earth. There is no reason to suppose that the equator is not a perfect circle. Nor is there any indication that the northern and the southern hemispheres are not the same shape.

All modern determinations of the size of the earth agree closely with the following values :

Equatorial radius	3963·3 miles	Flattening	1/297.
Polar radius	3949·8 miles		

The latitude of a place—so many degrees, minutes, and seconds of arc north or south of the equator—is evidently not enough to define the position of the place upon the surface of the earth : it tells us that the place is on a certain circle, parallel to the equator, called a parallel of latitude. To define exactly the position of the place we must know also its longitude. And to define longitude we must define first what is meant by a meridian.

### Meridian.

A section through the axis of the earth cuts it into two equal halves and the line of section along the earth's surface is a meridian. If the earth were a perfect sphere the section would be circular ; as it is, the section is slightly elliptical. The meridian of a place is therefore the line of section of the earth's surface by a plane passing through the place and the two poles. And the angle at the pole between two meridians is their difference of longitude.

### Longitude.

It is clearly convenient to have one meridian as a zero meridian from which longitudes are to be measured ; and there is now an almost general agreement to use as the zero of longitudes the meridian passing through the Royal Observatory at Greenwich. In past times there was no such agreement. Every country reckoned its longitudes from the meridian passing through its capital city, or in some cases from the meridian of

the island of Ferro, the most westerly of the Canaries. But the early predominance of British shipping, and the wide use of the British Admiralty charts, led to such an extended use of the Greenwich meridian that no other could compete with it. Thus the positions of all places on the World are now usually defined by latitude north or south of the equator, and by longitude east or west of Greenwich.

The student should study latitude and longitude on the globe. He will then see at once that the following statements are true :

Places due north or south of one another are on the same meridian, and have the same longitude.

The meridians converge towards the poles, and all meet at the poles. Hence two places in the same latitude, but on different meridians, are nearer together the nearer they are to the pole. The length of a degree of longitude is 69.17 miles on the equator ; in latitude  $30^{\circ}$  it is only 59.96 miles ; in latitude  $60^{\circ}$  34.67 miles ; and at the poles there is really no such thing as longitude, for all the different meridians have come together.

### Time.

The earth turns on its axis with perfect regularity, and provides a perfect measure of time. It is the business of the astronomer to determine the precise time with his transit instrument, and to distribute that time for the use of the world in general. Now the time is not the same all over the world. It is the same for all places on the same meridian. But on different meridians the time is different ; and the difference of time is the same as the difference of longitude. Thus, even in a small country like England, the true time in different parts of the country will differ by about twenty minutes, the time in the east being later than the time in the west. But this would be very inconvenient for railways, telegraph services, and business generally. Hence the whole of England keeps the time of the

meridian of Greenwich, which is signalled every day over the whole telegraph system of the country at 10 A.M.

Further, in order to diminish as far as possible the inconvenience of the necessary change of time as one passes from one country to another, there is an agreement, which is being continually extended, to make the various times of the world differ by whole hours from Greenwich time. Thus, Central Europe, with the exception of Holland, keeps time one hour fast on Greenwich. France, Belgium, Spain, and Portugal

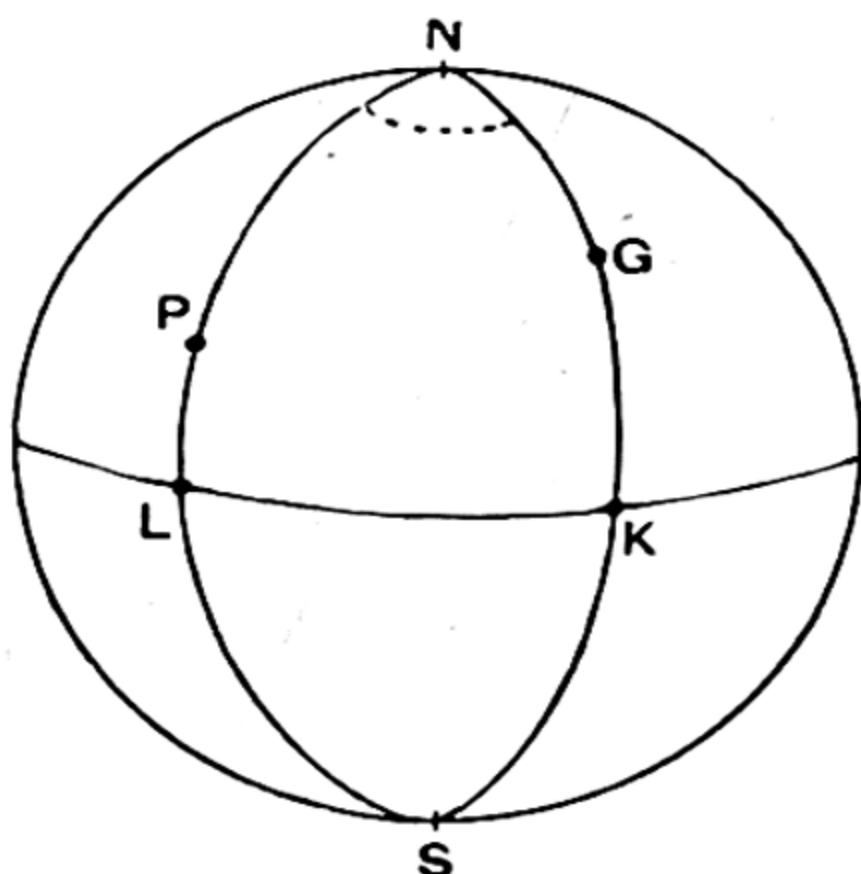


Fig. 4. NGS meridian of Greenwich. NPS meridian of place. Difference of longitude = angle at P between the meridians, or the arc KL along the equator.

keep Greenwich time. Egypt and British South Africa keep two hours fast; and so on. The United States and Canada cover so wide a range of longitude that it would be inconvenient for them to keep the same time throughout, so they have divided the country up into districts which keep time four, five, six, seven, and eight hours slow on Greenwich.

This system of standard times has spread very rapidly of late years, so that the peculiarity of Ireland in keeping Dublin time, about 25 minutes slow on Greenwich, becomes every year more marked.

## CHAPTER II

### THE SEASONS

As the earth revolves about the sun in the course of the year, the direction of its axis remains very nearly fixed in space ; that is to say, it remains very nearly parallel to itself. But it is inclined at an angle of about  $66\cdot5$  degrees to the plane of the orbit, and is not perpendicular to it. The consequence of this is, that the sun appears to be nearer the north pole of the sky at one time of year, and nearer the south pole of the sky at another. Without the use of a globe it is not very easy to explain this apparent motion of the sun in the sky, but its effects may be stated very simply as follows.

#### **Length of the Day.**

At the beginning of spring, about March 21, the sun comes north of the equator, and in the northern hemisphere it is above the horizon more than twelve hours. The further the sun goes north, and the further north one is upon the earth, the longer the sun is above the horizon. Thus as spring advances the days in the northern hemisphere get longer and longer, and as one goes further north they increase in length very rapidly, so that in very high latitudes the sun may be above the horizon all night, and in fact there is no night. The Arctic circle, in latitude  $66\cdot5$  north, equal to the inclination of the earth's axis to the orbit, marks the limit of the region where the sun may be seen above the horizon at midnight. On this circle the sun is

above the horizon for a day or two just at midsummer. Further north, he remains above the horizon for a number of days ; and finally, at the North Pole the sun is above the horizon for six months together, and below it for the remaining six.

This long duration of sunlight in the north in summer to a great extent compensates for the fact that the sun does not rise very high in those latitudes. The summer is short, but it is comparatively very warm.

It is easy to see that in the Antarctic regions the conditions are just opposite those in the Arctic. When the north polar regions have their long night, the south polar regions have their long day. Thus Amundsen and Scott reached the South Pole at a season which was their summer, but our winter in the northern hemisphere.

The seasons are inverted in the two hemispheres, but the months remain the same. Thus June and July are mid-winter months in the south, and Christmas comes at midsummer.

### **The Tropics.**

At the beginning of spring—that is to say, spring in the northern hemisphere—the sun is just crossing the celestial equator from south to north. He rises due east and sets due west for all the world ; and at midday he passes vertically overhead at places on the equator of the earth. As he goes north in the sky, he passes at midday vertically over places to the north of the equator, until at the northern midsummer he is overhead at noon in places as far north of the equator of the earth as he can go north of the equator of the sky : that is, 23·5 degrees north ; the quantity 23·5 degrees being, as we have seen, the inclination of the equator to the orbit of the earth about the sun. After the northern midsummer the sun begins to go south again, and eventually the same series of conditions is repeated in the southern hemisphere.

The two parallels of latitude called the tropics of Cancer and Capricorn are the limiting parallels where the sun is vertically overhead at noon in the midsummers of the two hemispheres. At any place between them the sun is vertically overhead at noon twice a year ; outside them the sun is never vertically overhead. We should note that the tropics are properly the two parallels ; but the word is often used to denote the belt of the earth between them. Thus we say that a place is in the tropics, meaning that it is between them.

They are called the tropics of Cancer and of Capricorn because when the sun is on one he is in the sign Cancer ; and when on the other, in Capricornus. These are two of the twelve "signs" of the Zodiac, which figured so largely in the ancient astronomy, but are not of so much significance in modern times, since their interest is connected very greatly with astrology, rather than with astronomy.

### Equinox and Solstice.

There are several terms connected with the seasons which may now be defined. The "equinoxes" are the times when the sun is crossing the equator and when, as their name implies, day and night are equal all over the earth. The "solstices" are the seasons when the sun "stands still" ; that is to say when he is as far north or south of the equator as he will go. At a summer solstice the days are as long and the nights as short as possible ; and the reverse is true at a winter solstice.

### The Seasons.

The earth's path round the sun, or orbit, is not quite circular ; and the earth is therefore nearer the sun at some times than at others. But this is not the cause of summer and winter. The effect of the slight difference in the distance of the sun at different times of year is insignificant compared with the effect of the

altitude of the sun in the sky. The heating effect of the sun is most powerful when he is directly overhead—partly because his rays have then a less depth of air to pass through before reaching the ground ; but mainly because when they fall vertically a given quantity of the sun's heat is spread over a smaller area of the ground. The sun is actually nearer the earth in January than in July, yet the temperature in northern latitudes is much colder in the former than in the latter month. It is evident, then, that the effect of the change in the sun's distance is very slight, compared with the effect of the change of inclination of his rays.

In drawing figures to show the cause of the seasons we must always remember that the sun is so immensely distant that his rays which reach the earth are parallel. It is difficult to imitate this in using the globe with a lamp or candle to represent the sun. But a globe which is so fitted that its axis of rotation may be set at any angle to the horizon is very well adapted to show how the length of the day varies with the distance of the sun above or below the equator of the sky, and with the distance of the place north or south of the equator of the earth.

### **Refraction and Twilight.**

Were the earth without any air, the sun's rays would fall in straight lines upon the earth, and exactly half the whole earth would be illuminated at any one time. But the existence of the air makes a very considerable difference. The rays of the sun which fall obliquely on the upper air are bent round to some extent, with the result that they illumine rather more than half the earth. This bending of the rays of light is called refraction. It has the effect of raising the sun above its true place in the sky, by an amount which is quite large when the sun is near the horizon. Thus we see the whole disc of the sun still above the horizon when it would have quite disappeared were it not for the

refraction of the air. The day is thus lengthened by some minutes. And even when the sun has disappeared from sight, there is still a great deal of light in the sky due to the scattering and reflection of the light in the upper layers of air still in the sun's rays. Thus it is not really dark until the sun has sunk some eighteen degrees below the horizon. But in the middle of summer the sun does not sink so low in the latitude of England ; and thus there is twilight along the northern horizon all night.

## CHAPTER III

### MAPS AND SURVEYING

#### **Explorer's Survey.**

We have seen that the navigator can determine his position at sea by observing the latitude, from the sun at noon, or from the stars ; and by determining his longitude, or the difference of time between ship and Greenwich. It is, of course, possible to make similar observations upon land ; and it is usual to find that the positions of a number of points in a newly explored country are thus determined. But it is a mistake to suppose that detailed maps are made in this way.

#### **Triangulation.**

No satisfactory map of a country can be made by piecing together the work of explorers or of individual surveyors working haphazard. To make a good map it is necessary to work in a systematic way. The process is usually as follows. First a number of stations are selected which are intervisible, and they are marked with beacons. These stations will naturally be in commanding positions such as the tops of mountains. The cairns of stones which are often to be seen on mountain tops cover the stations where the surveyors have set up their instruments. These stations are chosen so that they make well-shaped triangles—each triangle joining on with its neighbour until the country is covered with a continuous framework of them. The angles of these triangles are all measured

with a theodolite. The length of one side of one of the series is measured in feet, with great accuracy. This is called the base. Then the lengths of all the rest of the sides of all the triangles may be calculated by trigonometry from the one measured base and the observed angles. This use of trigonometry in surveying is the most important of the many uses of that science.

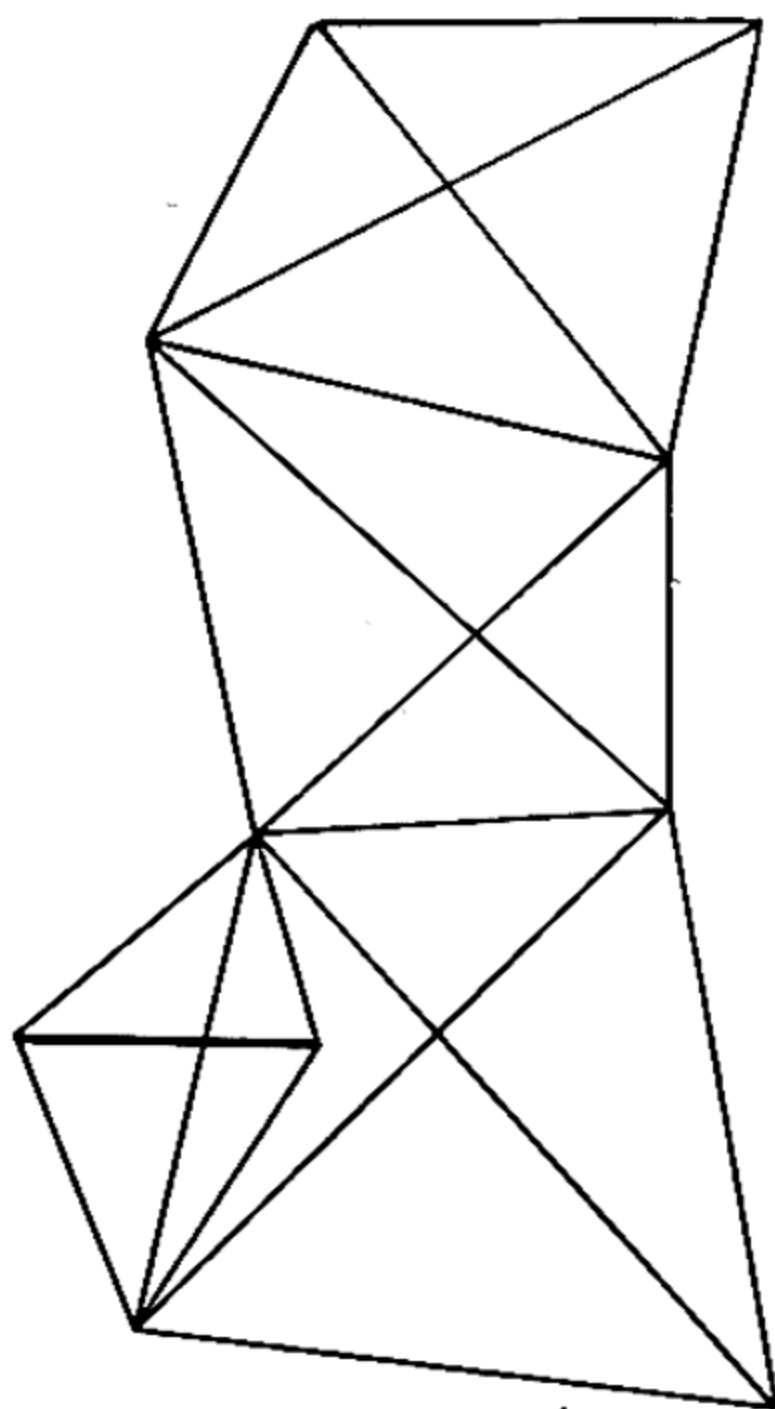


Fig. 5.

### Latitudes and Longitudes.

The triangulation gives us a framework whose size and shape are known but not its position on the surface of the World. In other words, we cannot yet show the relation of the triangulation to the meridians of longitude and the parallels of latitude. To obtain this it is necessary to determine the latitude and longitude of one point of the triangulation, and the azimuth of

one side. (The *azimuth* of a point  $B$  as seen from a point  $A$  is the angle which the line  $AB$  makes with the true north and south line, or the meridian, through  $A$ .) These quantities being found for one point and one side, we can calculate by trigonometry the latitudes and longitudes of all the other points, and the azimuths of all the other sides.

### Filling in Detail.

The framework of triangulation is the skeleton on which the body of the map is constructed. The method of construction attaching the detail to the framework differs in different countries. On the Ordnance Survey of England, for example, the detail is filled in with chain measurements similar to those employed in the survey of small properties. This is accurate, but very expensive. The more modern way is to fill in the detail with the plane table.

### The Plane Table.

The plane table is a rigid drawing board mounted on a firm tripod so that it can be turned round to a nicety and clamped in any desired position. The sight rule is a rule with folding sights which stand up at either end. When the rule is directed on an object a line drawn along the edge of the rule is parallel to the line of sight. Thus, if the points of the triangulation are plotted on the plane table, and the table is set up at one of these points we may proceed as follows. Lay the sight rule along the line joining this point to another, as plotted on the table. Turn the board until the sight rule is directed to the latter point of the ground. The arrangement of the points on the table is then similar and similarly situated to the actual points on the ground. When the table is thus set additional rays may be drawn to conspicuous points which are not included in the original triangulation. These will be useful in fixing churches and other

buildings, but they will not provide for the mapping of objects such as roads, railways, and rivers, which are the most important features of the topographical map. To put in this detail we must apply another method, that of resection. The plane table is set up at the cross road or other point to be fixed, and the surveyor looks round to see which of his principal stations is in sight. He sets the plane table roughly by compass, and draws rays back from these points, already fixed on the table. The rays intersect at the point representing his place



Fig. 6. Plane Table and Sight Rule : School of Military Engineering pattern.

on the map ; or if they do not intersect precisely, owing to the setting by compass not being quite accurate, he performs the process known as the "solution of the triangle of error," which gives him the required solution. In this way all the detail of a country can be filled in quickly and accurately when once the framework of triangles is made.

This provides the plan of the country. We have now to consider how to determine the height above sea level of the ground.

## Mean Sea Level.

The first thing to do is to find the mean level of the sea at one or more points on the coast : by mean level we mean the average height of the sea taken over a long period of time. The level of the sea is continually changing owing to the rise and fall of the tides, the influence of winds, and of the pressure of the air above it. Thus it is necessary to take the average over a long time, in order to get rid of these variations, partly regular and partly accidental. The necessary observations are made with a tide gauge, an instrument which is rather too complicated to be described here.

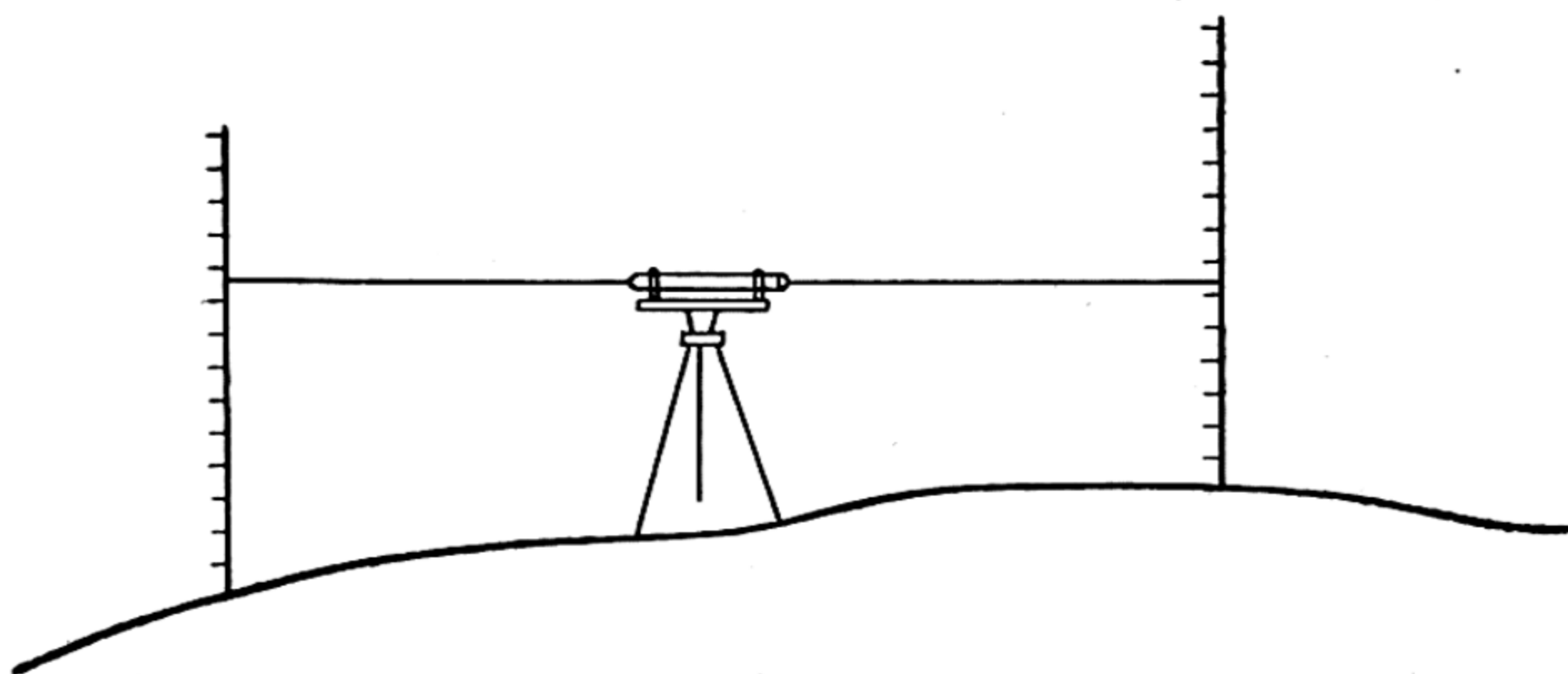


Fig. 7. Levelling.

## Levelling.

From the tide gauge the levels are carried inland by means of the instruments called the surveyor's level and staves. The levelling instrument is a telescope mounted on a tripod so that it can be set to point exactly level. The staves are poles graduated in feet and fractions of a foot. Now suppose that two staves are set up with the level half-way between them. The surveyor looks through his telescope and finds that it points to 4.21 feet on the first, and to 7.68 feet on the second. The conclusion is, that the ground at the

first station is 3·47 feet higher than it is at the second. He then moves the first stave forward to another station, and moves the level forward so that it is again between the two staves. He reads again, and finds that the forward station is 1·25 feet, and the back station 9·40; when the ground at the former is 8·15 higher than at the latter and  $8·15 - 3·47$ , or 4·68 higher than at the starting point. In this way lines of levels are run across the country, along main roads or railways; and “bench marks” are cut on walls and gate posts in the well-known form of the broad arrow with a bar across the top. Wherever a bench mark is found the precise height above sea of the cross line may be found inscribed on the large scale maps of the Ordnance Survey. These serve as points all over the country from which the height above sea of any neighbouring point may be found.



Fig. 8. Bench mark.

### Heights by Angles of Elevation.

It is difficult and expensive to carry these lines of levels across rough country and up to the tops of hills; and some simpler method of finding heights is required. This is found in the measurement of angles of elevation or depression from one point to another by means of the theodolite, or more roughly by the clinometer. With the former the heights of all the points of the triangulation are found from some of the stations on the lines of levels; and with the latter the heights of other less important points are found. These operations furnish the height above sea of a great number of individual points, which are marked on the map in figures. These numbers are called spot heights.

### Contours.

But it is not possible to represent the varying relief of the ground by covering it with numbers of spot

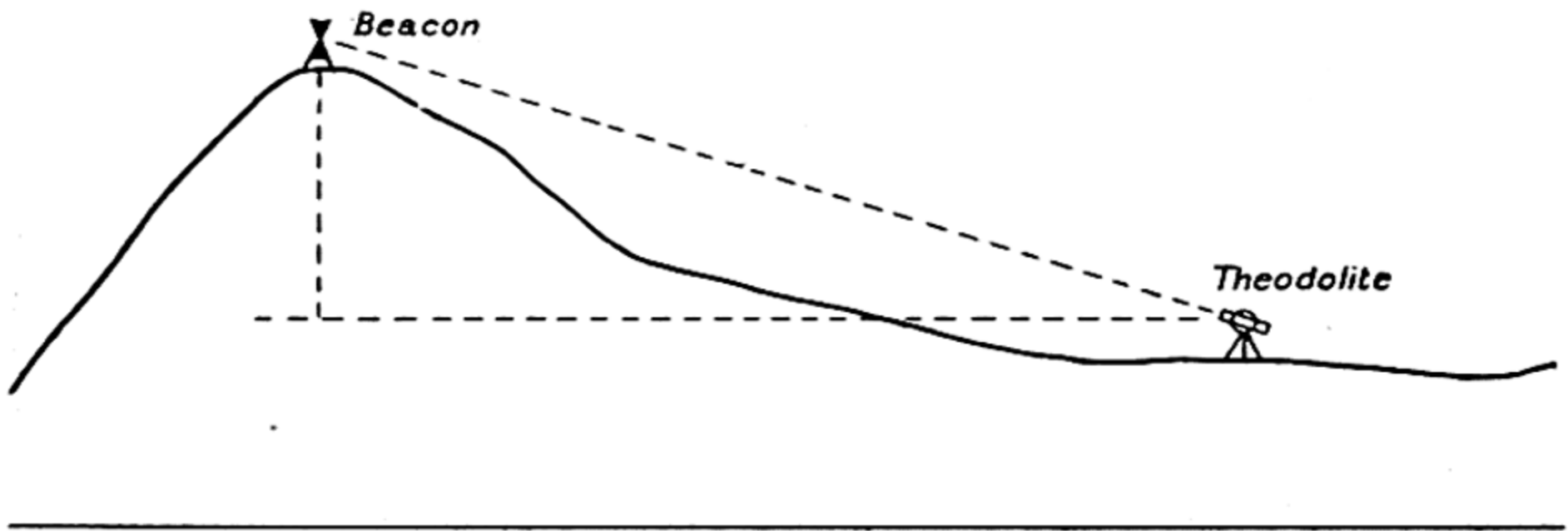


Fig. 9. Heights by theodolite. (Simple case : curvature of Earth neglected.)

heights. The most precise and full representation is made by drawing contour lines. A contour is a line drawn on the ground to follow a definite height above sea level, generally a round number of feet. Thus,

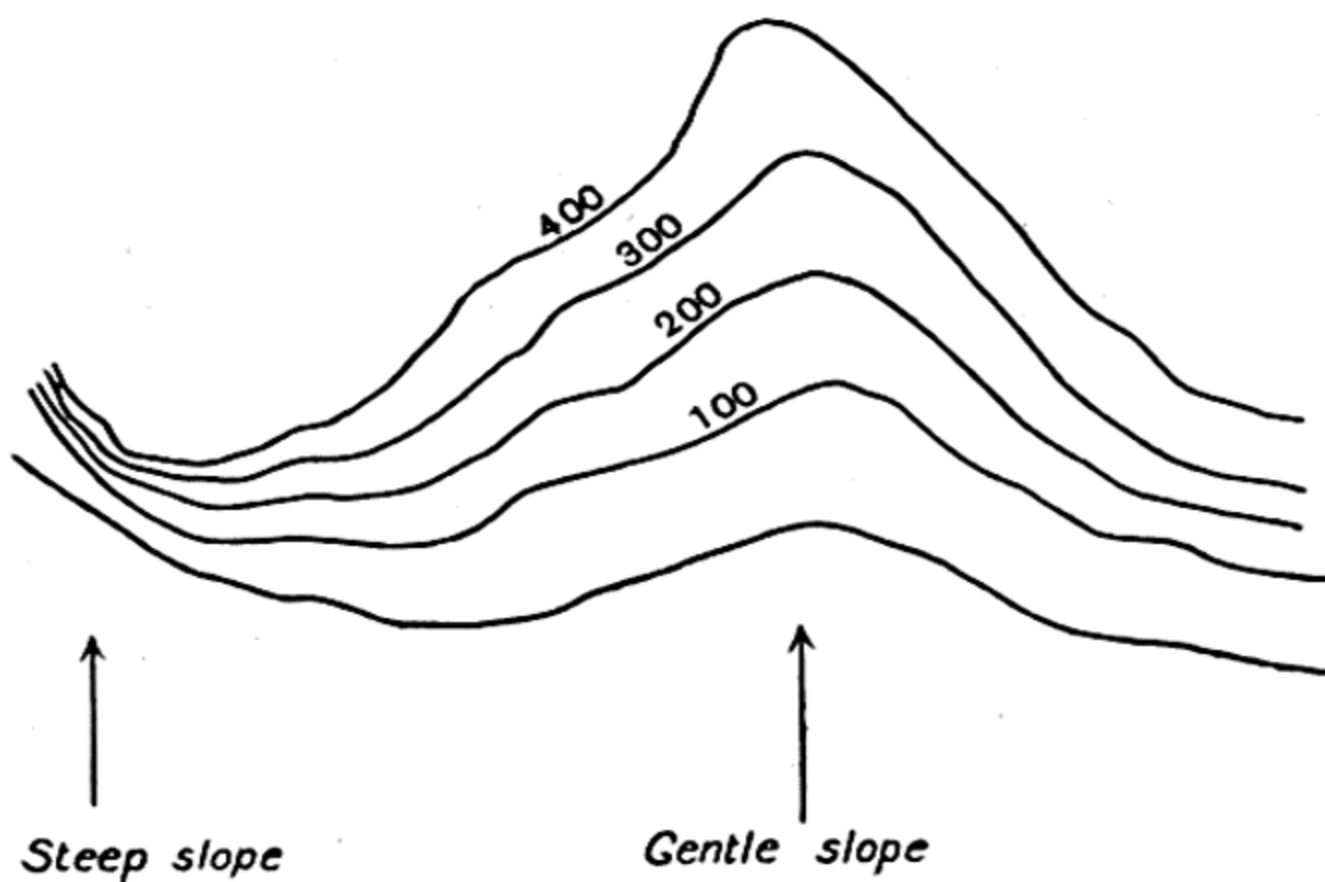


Fig. 10. Contours.

the 100 foot contour runs at 100 feet above sea level ; and if the sea were raised 100 feet this contour would

be the new coast line. The vertical interval between the contours should be uniform : that is to say, contours should be drawn at 100, 200, 300 feet, and so on ; it is a mistake to draw them at 50, 100, 200, . . . or at 100, 200, 400, . . . . For when the contours are spaced at equal vertical intervals it is possible to obtain from them accurate knowledge of the shape of the ground. Where the contours come wide apart, the slope is gentle ; and where they are near together the ground is steep. Where the contours are wide apart at the top, and come closer together lower down the hill, the slope is convex ; while if they are wider below, and closer above, the slope is concave. Where the contours run back into a hill, there is a hollow ; where they come forward there is a spur. Thus it is possible with practice to read on a well-contoured map all the shape of the ground ; and this is possible on no other plan of representing hill features.

### Hill Shading.

The various forms of hill shading, that are commonly found on less elaborate maps, can do little more than indicate that there is a slope. The degree of slope cannot be shown without making the shade so dark for the steeper slopes that it is not possible to read the other detail of the map. Further, if the shade is put on the slope with regard only to the steepness of the ground, it is not easy to distinguish the direction of the slope : a valley and a ridge look much the same. To get over this difficulty many map-makers have adopted the plan of drawing the shade as if it were thrown by a light low in the north or north-west. This brings up the relief of the land, sometimes in an exaggerated way. Some of the most successful of recent maps rely principally on fairly strong contours for the detailed representation, and use light hill shading to throw up the relief.

### Layer System.

Recent improvements in the processes of colour printing have made possible the common use of another system, the "layer system," that has many merits. The map is first contoured, and then the spaces between the contours are filled in with a tint of colour graduated according to a scale given on the margin of the sheet. Thus at the first glance one may see which are the high and the low parts of the country, and what are the approximate heights above sea. Success in the use of the layer system depends principally upon a careful and delicate transition from one shade of colour to the next, avoiding all sudden change either in depth or tone; and it must be remembered that not all country is equally suited to the system. In very steep country, when the contours are numerous and close together, the colour of the layers is affected by the colour of the contours, and the result is not very effective. On the other hand, when the country is nearly level, whether low plain or high plateau, there will be broad stretches of the same colour, and again the effect of relief is lost. The most generally successful maps combine all three methods, hill shading, contours, and layer tints; but that is, of course, expensive.

Of the English Ordnance Survey maps the one inch to the mile, 3rd Edition, is a good example of contours and hill shading (or, more precisely, hachuring); the two miles to the inch, or half inch map, is in two forms, the first contoured and hill shaded, the second contoured and layer tinted with hill shading also on the older sheets.

### Scales of Maps.

The scale of a map is the relation between a distance shown on the map and the corresponding distance on the ground. Thus the map may be on the scale of one inch to the mile; or one centimetre to the kilometre.

This relation is often expressed as a fraction, called the representative fraction. For example :

One inch to the mile =  $1/63360$ , since there are 63360 inches in one mile.

One centimetre to the kilometre =  $1/100000$  ; and so on.

The word scale is also used to denote the diagram usually engraved below the title of the sheet, by means of which any distance measured on the map may be translated at once into the corresponding distance on the ground. One unit of the scale is generally divided into quarters or tenths ; but it is very commonly done wrong. The rule should be that the subdivided unit should be to the left of the zero of the scale, and numbered as shown in the figure ; a few minutes trial will show the great advantage of numbering scales thus.

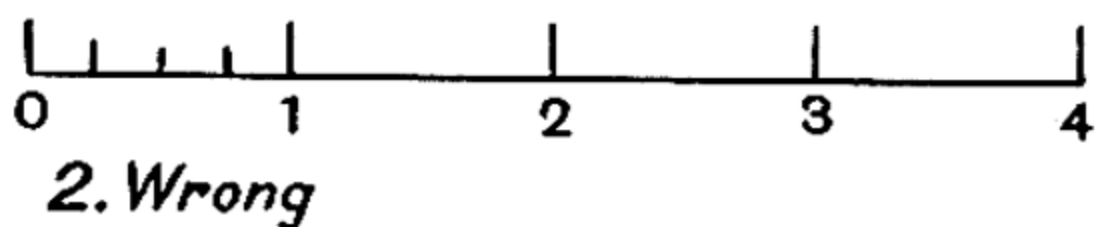
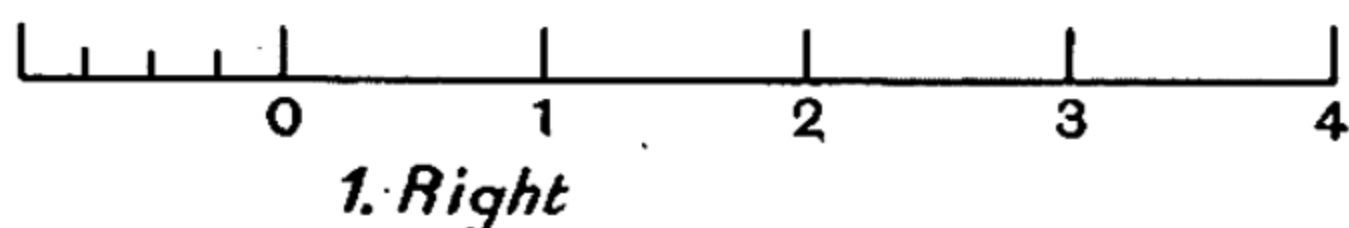


Fig. II.

## The Magnetic Compass.

A magnetised bar of steel, freely suspended at its centre of gravity, so that it is perfectly balanced, is acted on by the magnetism of the earth, and sets itself along the lines of magnetic force passing through the place. In most parts of the world the needle "dips," the north end being generally downwards in the northern hemisphere, and the south end in the southern. Before the needle can be used conveniently

for giving the direction, it must be balanced so that it hangs horizontal. In cheap compasses this is often done by dropping sealing-wax on the card.

When the needle is thus balanced, the end marked north will point towards the magnetic north, which differs from the true north by an amount which is different in different parts of the world, and changes also slowly at any fixed place. Thus at the present time in England the compass points from 15 to 18 degrees west of true north, and the "variation" of the compass is said to be this amount west. Very little is known about the cause of this change in the variation of the compass, and the whole subject of terrestrial magnetism is a difficult one, into which it is not possible to go in an elementary way.

It is usual to give on the margins of the Ordnance Survey maps a diagram showing the variation of the compass at the date of publication of the map, and the probable annual change. But this cannot be predicted with certainty, and to obtain an accurate value of the variation it is necessary to determine the true north by astronomical methods, and compare this determination with the compass bearing.

### **"Points of the Compass" and Compass Bearings.**

The old-fashioned system of denoting the compass bearings by points, thirty-two in number, is rapidly falling into disuse at sea, and should never be employed on land. By far the most convenient way to reckon bearings is in degrees, from north (true or magnetic as the case may be), round through east, south, and west, right round to north again. In this way the bearing is a single number, and is not complicated by signs or by qualifications of any kind. The following brief table gives in the first column every fourth "point of the compass"; in the second the nautical way of expressing the same thing in degrees; and in the third

column the way used in geographical surveying with the compass. The last is the most simple and convenient.

Point	N.	Nautical	N.	Land	0°
	N.E.		N. 45° E.		45°
	E.		N. 90° E.		90°
	S.E.		S. 45° E.		135°
	S.		S.		180°
	S.W.		S. 45° W.		225°
	W.		S. 90° W.		270°
	N.W.		N. 45° W.		315°

## CHAPTER IV

### MAP PROJECTIONS

We have seen that the process of survey produces results in the shape of

(1) the latitudes and longitudes of a number of stations ;

(2) the detail of the country lying round about groups of these stations, drawn on plane table sheets.

Within the limits of a plane table sheet the question of the curvature of the earth does not produce any difficulty. But when it comes to constructing a small scale map of the whole country, we are at once met by the difficulty that the round surface of the earth cannot be represented accurately upon a flat sheet, and we are compelled to adopt some method of constructing the meridians and parallels that shall give the best representation possible of the area. This construction of meridians and parallels is called the "Map Projection."

#### **Properties of a Map Projection.**

A map projection is not a projection in the geometrical sense, such as might be obtained by imagining the shadow of the meridians and parallels cast on a flat surface by light proceeding from some chosen point. It is merely an orderly way of constructing the network of meridians and parallels. But of the infinite number of ways in which this might possibly be done, there are a fairly small number that have valuable properties, such, for example, as representing areas correct to scale, or distances along the meridians or along the parallels correctly, or giving the true bearings of all points from

the centre of the map. In practice we consider only those projections that have one or more of these valuable properties.

### **Distortion.**

The natural tendency of any map projection is to represent the parts near the centre of the map with almost complete accuracy, and to become increasingly distorted in one way or another towards the edges. Hence there is a considerable difference between projections which are suitable for large and for small areas respectively. The representation on a single sheet of a topographical map may be practically perfect all over. When it comes to representing a large area such as the continent of Asia, or a hemisphere, or even the whole world, the difficulties become much greater, and it may be necessary to sacrifice something at the centre in order to improve the representation of the country out towards the edges of the sheet. But in such a sheet there will always be grave distortion of one kind or another, and the question has to be decided, which kind of distortion is the least harmful to the particular purpose of the map.

Within the limits of this book it is impossible to deal properly with the subject, which demands a strict, though not difficult, mathematical treatment to make it complete. We must confine ourselves to a short description of a few of the principal properties of common projections.

### **Scale.**

It may be desired that a projection for a map should be on the scale of, say, one in a million : that is to say, that a distance between two points on the map should be the one-millionth part of the true distance measured the shortest way along the surface of the globe. A projection cannot be true to scale over all. But it may be true along the meridians, or along one or more parallels, or along the central meridian only.

### **Areas.**

Or again, a map may represent all areas true to scale, though not of their true shapes. Such a map is called an equal area projection.

### **Shapes.**

Or again, it may represent the shapes of very small portions correctly, though not their areas. It is then called an orthomorphic, or "right shape" projection. But it is important to observe that only very small areas are represented by their right shapes, and that large areas are not, and cannot be. Thus, for example, Mercator's projection is orthomorphic, yet it is obvious that it does not represent large countries like Greenland in high latitudes, by their right shape.

### **Bearings.**

Or again, the map may represent truly the bearings or directions of all points from the centre. The projection is then said to be "azimuthal" or "zenithal."

### **Conical Projections.**

Now there are various ways of constructing map projections to fulfil some or all of these properties, and a number of them are included in the classes "conical" and "zenithal" projections. Without going into the question of the methods of constructing them, we may say that the characteristic feature of all conical projections is, that the meridians are straight lines, radiating from one point; and that the parallels are portions of concentric circles described about this point as centre.

The only example of this projection commonly found in atlases is the Simple Conical Projection, on which the scale along the meridians is correct everywhere, and the scale along one parallel, called the "standard parallel" is correct, but not along the others.

By modifying the distances between the parallels it is possible to make the projection equal area or

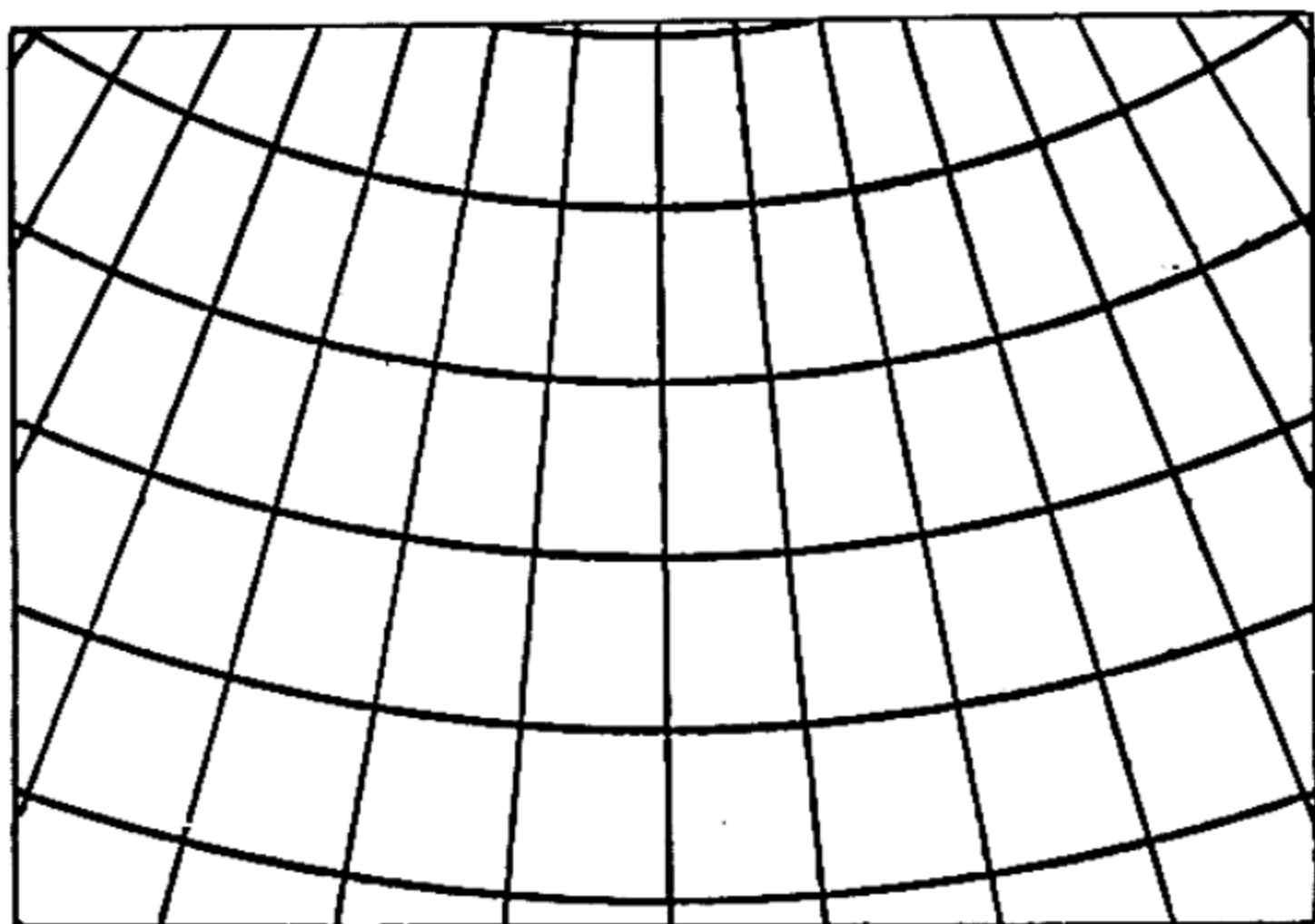


Fig. 12. Diagram of a Conical projection : Parallels concentric circles : Meridians equally spaced radii from the common centre.

orthomorphic ; but this is not commonly done, and these cases may be neglected in a brief review of the subject.

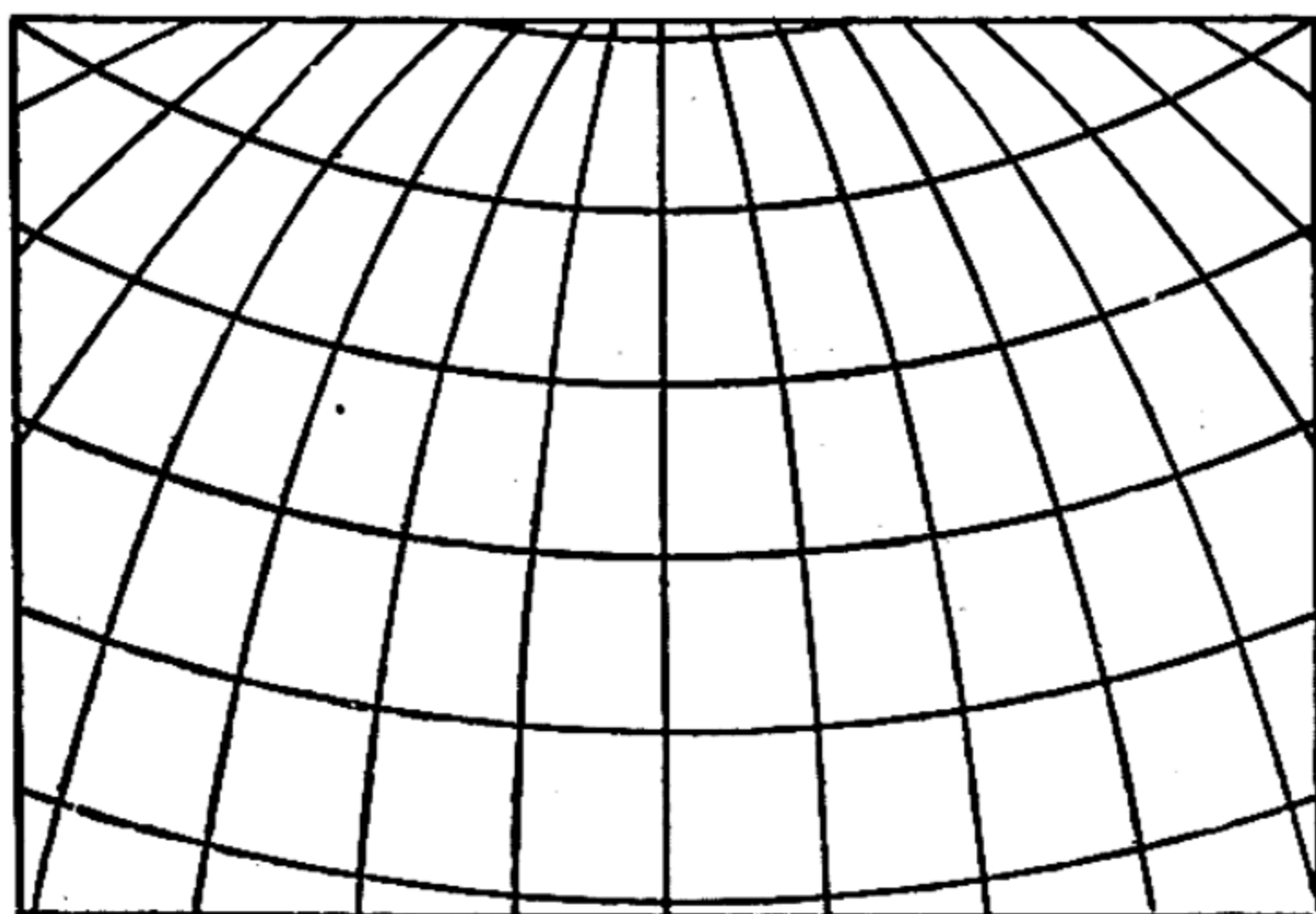


Fig. 13. Diagram of Bonne's projection : Parallels concentric circles : Meridian curves cutting parallels at true distances.

A very common modification of the simple conical projection is that known as Bonne's, in which the parallels are as before, but the meridians are curved inwards so that all the parallels are divided truly, instead of only one. This projection is equal area, and is very commonly found in atlases. It makes a good projection for the map of Europe.

### Zenithal Projections.

In zenithal projections both meridians and parallels are curved, but the parallels are not concentric circles, and generally not circles at all. Their chief property,

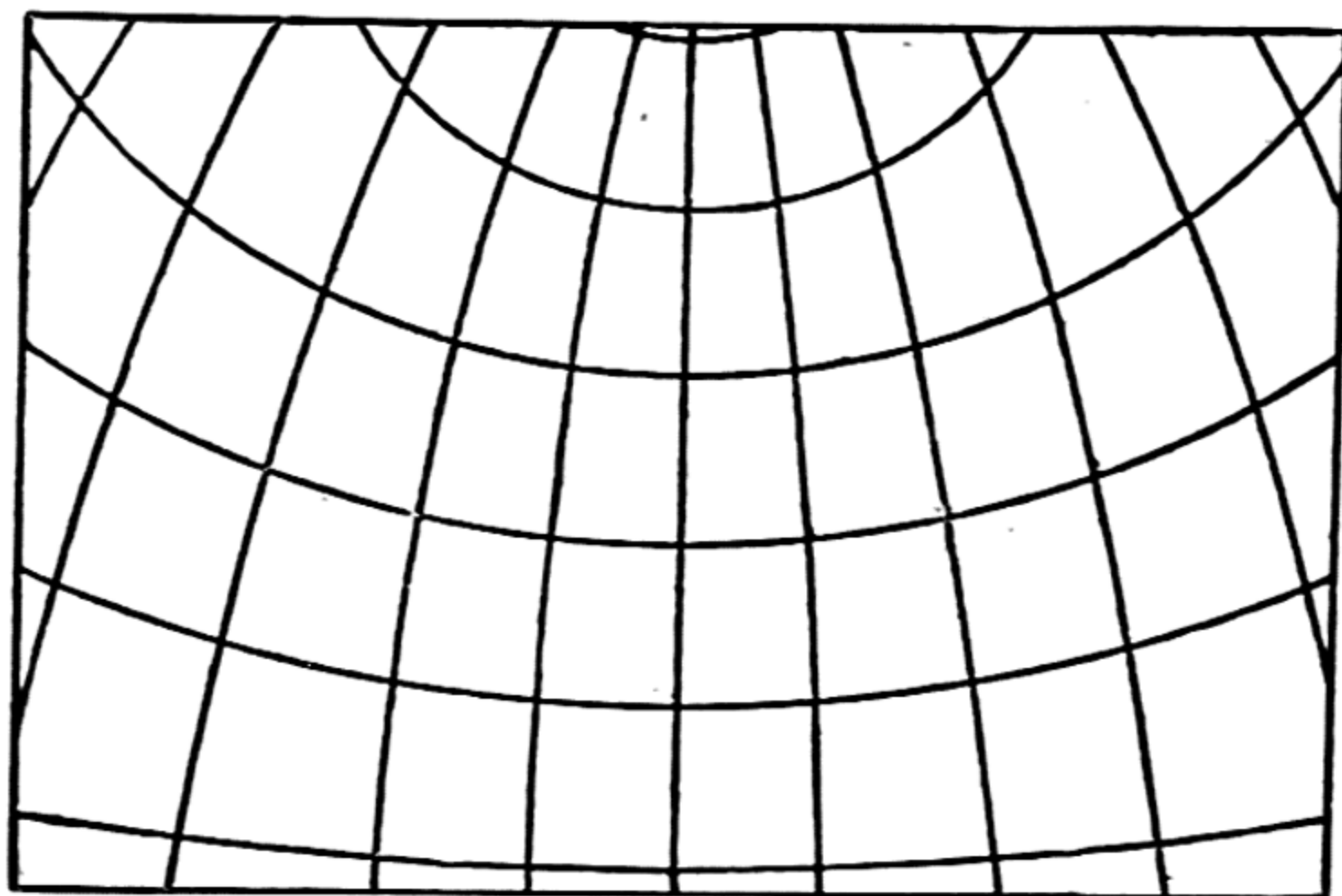


Fig. 14. Diagram of a Zenithal projection : Parallels not concentric circles : Meridians not cutting parallels at equal intervals.

as we have seen, is that from the centre of the map all bearings are true : that is to say, if a place bears  $60^\circ$  east of north from the point which is taken for the centre, the line joining it to the centre of the map makes that angle with the central meridian. According to the method of construction the map may be either equal area, or equidistant, that is, representing distances from the centre on their true scale; or it may

be orthomorphic, though this is uncommon. These cannot always be distinguished from one another without measurement.

A special case of the conical projection occurs when the point to which the meridians converge is taken away, to infinity, so that the meridians become parallel straight lines. These are "cylindrical" projections. The only one that is common is the well-known Mercator's projection, otherwise the cylindrical orthomorphic. This has special technical advantages in navigation, and all charts are constructed on this projection. But it represents areas and distances very badly, and should not be used for a land map.

Maps of hemispheres should be made on a zenithal projection; but very commonly they are made on the "globular" projection, which has no interesting properties, and no merits, except that it is easy to construct.

### **Topographical Maps.**

Maps of small areas on a fairly large scale, such as the individual sheets of a topographical survey, are frequently on a "polyconic" projection, a modification of the conical which has certain technical advantages. For a sheet only a few degrees either way it is practically perfect and it has the great advantage that neighbouring sheets fit it accurately along the edges, though it is not possible to join together an indefinite number of sheets.

The Ordnance Survey maps of England are on a projection known as Cassini's, which is convenient for a small country, but has no special properties of interest. The Ordnance Survey of Scotland is on Bonne's projection, and consequently the English and the Scotch maps do not fit together accurately, though the misfit is not so great as the error caused by the shrinkage of the paper on which they are printed.

## CHAPTER V

### LAND AND WATER

#### **Distribution of Land and Water.**

As the result of surveys and observations in all parts of the world, it is ascertained that the land covers rather more than one-fourth of the earth's surface, so that of the total area of 197,000,000 square miles, 55,000,000 square miles are assigned to the land and 142,000,000 to the sea. By referring to a globe or a map of the hemispheres it will be observed that the southern half has the largest portion of water, while most of the land lies north of the equator. Britain is the centre of the habitable part of the earth, and New Zealand lies in the middle of the water hemisphere.

#### **The Eastern Hemisphere and the Western Hemisphere.**

From the map it will be seen that there are two well-defined bodies of land separated by two great oceans. The larger land mass includes Europe, Asia, and Africa, and these, with Australia, are often spoken of as the Old World or the Eastern Hemisphere; while the other portion, consisting of North and South America is known as the New World or the Western Hemisphere. The land is much broken up, and in the Old World long arms and inlets of the sea intersect it and cut off large portions from the rest. The sea on the other hand is one continuous whole, and, when penetrating farthest into the land, its most distant openings retain their connexion with the main body of water.

## The Continents.

The great land masses are grouped into a few subdivisions known as continents. Although strictly there are only two continents, the Old World and the New World, yet they are usually grouped in three pairs, the first consisting of North and South America, the second of Europe and Africa, and the third of Asia and Australasia. One of the most marked features of the continents is their tendency to be massed towards the north, and to taper away towards the south. Africa dwindles away to the Cape of Good Hope, and America tapers to Cape Horn.

## Islands and Peninsulas.

Large portions are completely cut off from the main land masses, as Australia, New Zealand, Britain, Japan, Ceylon, and the numerous islands all over the globe. Other parts nearly isolated are termed peninsulas, and of such Africa is the most conspicuous example. It is joined by the isthmus of Suez to Asia, and if that strip were cut through or covered by the sea, Africa would become an island. In some sense the making of the Suez Canal has accomplished this, and the same thing has been done by the construction of the Panama Canal, which has separated North and South America.

## Inequality of the Land Surface. Mountains and Valleys.

While the surface of the sea has the character of one vast plain, the surface of the land abounds in irregularities. Some parts are flat, but much of its surface is varied into hills and valleys, and some portions rise into lofty and rugged mountains attaining a height of over 5 miles. Even these extreme altitudes are small when compared with the earth's diameter and make no difference whatever in the roundness of the globe if viewed from the moon. The passes



or roads by which it is easiest to cross from one side of a range to the other are as high as 18,000 feet above the sea in the Himalayas; the Khaibar and Bolan Passes between India and Afghanistan, and the roads of the Stelvio, Simplon, and Splugen in the Alps are famous examples.

It has been remarked that the names of the different parts of a mountain are mostly taken from the human body. For instance we speak of the head, crown, shoulder, breast, side, back, flanks, and foot, and when a line of mountains runs through an island or country it is named, quite appropriately, its backbone.

Valleys are the trenches or hollows through which rivers flow. They began in some hollow in the ground which attracted the water to flow along it, and which has since been widened and deepened by the flow. Though originally formed in this way, it does not follow that the river is still there; sometimes the bed of the valley is occupied by a series of lakes.

In many parts of the earth's surface there are conical hills or volcanoes which send out from time to time steam, dust, stones, and molten rock. These volcanoes often occur in long lines along the margins of the continents and in chains of islands.

### **Destructive Agents.**

There are slow and certain agents of destruction constantly attacking the land and carrying away its superficial substance which is deposited in the sea. If there were no hindrance to the steady process of land destruction there would come a time when all the dry land would disappear beneath the sea and there would be one universal sheet of water. Among the many destructive agencies at work are the rain and rivers, ice and snow, waves and tides, earthquakes and volcanoes.

It has been well stated that "to destroy, to transport, and to deposit is the work of rain and rivers," and that "water is one of nature's carving tools, very

probably the most important." Rain loosens the soil, and then carries it away. Rivers by a process of erosion wear away the surface and form valleys. In addition to this they carry the sediment to other places, where shallows, sandbanks and bars are formed. The



New Stream Course produced by sudden fall of rain.

cañons of the Colorado in North America are good illustrations of the erosive work of rivers, and the delta of the Mississippi is one of the best examples of the deposit of sediment on a large scale at the mouth of a river. Ice and frost play a prominent part in surface moulding, but as glaciers are confined to relatively

small areas, the action of ice must be considered less important than that of running water. There was a time, however, when a much greater part of the earth's surface was ice-clad, and the results of ice action of that period may still be traced. For instance, the presence of this ice-sheet caused vast accumulations of debris to be spread over the lower grounds, and the surface moulding of the ice has been the cause of many peculiarities of surface form.

The action of the sea, by its waves, tides, and currents, has a constant tendency to undermine the cliffs and wear them away. Of course this action varies in its effects according to the character of the rocks. Where the rocks are hard the process is very slow, but where they are soft the cliffs soon disappear, and in some parts of Norfolk and Suffolk whole villages have been submerged.

### Counterbalancing forces.

Besides the destructive agents at work there are counterbalancing agencies which are capable of upheaving deposits on the sea-bottom and piling up fresh stores of matter on the surface of the earth. After an earthquake it is by no means uncommon to find that the level of the land has been changed. In 1865 there was a great earthquake on the coast of Chile which destroyed several towns. After the shock it was found that the land in the Bay of Concepcion had been raised by 4 or 5 feet. Soundings all round the island of Santa Maria, which had been elevated, showed that the sea was shallower by 9 feet. It seems quite probable that part of the coast of South America has been raised several hundred feet by a succession of such upheavals.

The surface of the earth is also affected by the formation of coral reefs more particularly in the Pacific and Indian Oceans, and to a less extent in the Atlantic. Nor must human agency be omitted as one of the forces at work in changing the earth's surface. Large areas

in Holland have been reclaimed from the sea, and in Great Britain the drainage of the Fen district has changed an area that was formerly under water into fertile land.

The earth is subject to a cycle of changes. There are destructive and constructive agencies constantly at work on the surface of the solid earth, and it is probable that, on the whole, the equilibrium is well maintained.

### The Oceans and their Seas.

The sea, one continuous liquid mass, has been divided for purposes of description into different areas, named oceans. The Pacific Ocean is the largest and comprises in its area of 55 million square miles about half the water of the globe. Its boundaries are the western coasts of America and the eastern coasts of Asia and Australasia. The Atlantic Ocean, whose area is about 33 million square miles, is a longer and narrower belt of water between the western coasts of Europe and Africa and the eastern coasts of America. That part of the Atlantic Ocean within the Arctic circle is known as the Arctic Ocean, and that within the Antarctic circle as the Antarctic Ocean. The wide Indian Ocean is between Africa and Australia and communicates on either side with the two great oceans.

The minor tracts of the ocean more or less surrounded by land have such names as seas, bays, gulfs, and channels. The best example of an enclosed sea, almost separated from the main mass, is the Mediterranean Sea. Other illustrations are the Black and Baltic Seas in Europe, the Red Sea in Asia, and the Gulf of Mexico and Hudson Bay in America.

### The Depth of the Sea.

In recent years special expeditions to measure the depth and explore the bottom of the sea have been sent to all parts of the world, and the results obtained by them, especially by the *Challenger* in 1872, have

made great additions to our knowledge of the chief features of the oceans. At present, the Atlantic Ocean has been most thoroughly explored, and its wider parts have a depth of from 2000 to 3000 fathoms. The greatest depth in the Atlantic has been found near the Virgin Isles, where a sounding of 4561 fathoms was obtained. Soundings in the Pacific Ocean have revealed depths exceeding 5000 fathoms; and off Mindanao in the Philippines there is an abyss where a depth of 32,089 feet was obtained. It may be noted that the deepest parts of the oceans do not lie in or near the middle of their basins, but have been found not far from land.

### **The Saltness of the Sea.**

There is a ceaseless coming and going of water between the sea, the air, and the land, and this constant circulation explains the fact that the sea does not alter its level. Sea-water is always strongly salt in taste and differs from the water of air and rivers by its greater density. The water of the different oceans varies slightly in density, and that of the Atlantic is generally heavier than that of the Pacific. The saltness of the ocean is probably from the vapours of the atmosphere from which it condensed, and from the different salts carried into it by rivers and streams. When sea-water is analysed it is found to contain about  $3\frac{1}{2}$  parts by weight of salt in every hundred parts of water. Of the whole quantity of salts in sea-water, common salt forms by far the largest proportion—at least three-fourths; among the other saline substances are chloride of magnesium and sulphates of lime, potassium and magnesia, and carbonates of lime and magnesia.

### **The Temperature of the Sea.**

There are variations in the climate of the sea as well as on the land. The surface temperature of the sea varies with the latitude, the seasons, and with the

direction of the great ocean currents. In polar seas, the water has a temperature not much above that of melting ice ; while, in landlocked parts of the ocean within the tropics, *e.g.* the Red Sea, the temperature has been recorded from  $90^{\circ}$  to  $100^{\circ}$  F.

Sea water does not freeze at the same temperature as fresh water, but about  $4^{\circ}$  lower ; this is one of the reasons why the sea is not frozen so frequently as freshwater lakes. When sea-water is frozen it leaves behind the salts which it contains in solution, and which thus go to increase the saltiness of the unfrozen water.

Soundings taken by the *Challenger* showed a progressive lowering of the temperature from the surface downwards. Thus in the North Atlantic, the water had a temperature above  $40^{\circ}$  to a depth of from 750 to 1000 fathoms. Below that depth the temperature slowly sinks till it reaches  $34.4^{\circ}$  at 3000 fathoms down. This progressive lowering of temperature, with variations, is more or less true of all the oceans. This low temperature of all but the upper parts of the sea shows that there is a constant transference of water from the polar seas towards the equator. The heavy cold water sinks below the warm upper layers, which move towards the poles to supply its place. In this way the waters of the ocean are constantly mingled and kept from stagnation.

### The Movements of the Ocean.

The movements of the sea are not fitful and capricious as they appear to be, but on the contrary some of them are regulated by certain laws. Thus the movements of the tides can be calculated fairly well ; of currents not so well ; and of waves not at all. We may consider these movements under three divisions : waves, tides, and currents.

#### Waves.

Waves are surface disturbances due to the action of wind. Various names have been given to the different

forms assumed by the surface of the sea when influenced by the wind. In the shallower water near land, the well-defined waves are called *rollers*. The broad heaving undulations that prolong the effects of a gale far beyond the limits of the storm are known as the *ground-swell*; and when this swell bursts over a rock or a submerged reef, the mass of water is called *breakers*. The motions of waves and ground-swell are insensible in the deeper parts of the sea; they are merely surface agitations and their effects are probably sensible not more than a few hundred feet downwards. The height of waves in storms has been variously estimated, but in the North Atlantic the highest waves measured, during a storm, 43 feet from trough to crest. The rate at which waves travel in deep water depends on the length of the wave. In shallow water it is independent of the length of the wave and depends only on the depth of the water.

The tremendous force of breakers has a large influence in the wearing away of the coast. It has been calculated that in summer the average force of the Atlantic breakers on the west coast of Britain amounts to 611 lbs. on the square foot, while in winter the force is more than three times as great. A wave 20 feet high has been computed to fall with a pressure of about a ton on every square foot, and an extreme pressure of  $3\frac{1}{2}$  tons has been recorded.

## Tides.

The tides are the alternate rise and fall of the water due to the attractive influences exerted by the sun and moon. Each of these two bodies has such a strong attractive force upon the earth, that the tendency is to pull out the side of our world which is opposite to it. While the solid portion of the earth withstands this influence to a large extent, the ocean is drawn outwards and becomes heaped on that side where the attraction is exerted. On the other side of the earth, the ocean rises into a less prominent swelling, owing

to the fact that the force of attraction is less owing to the greater distance from the attracting body. As the moon appears to be revolving round the earth in about 25 hours, the outward bulging of the ocean-surface caused by the moon's attraction, must follow the moon and run completely round the earth in about 25 hours ; and of course the swelling on the opposite side of the earth must take the same course. Thus in the interval of 24 hours 54 minutes between two appearances of the moon on the meridian, there are two times of high-water or flood-tide, and two times of low-water or ebb-tide.

The sun has also considerable influence on the tides, and when the sun and moon are in conjunction, which happens at new and full moon, the highest rise and the lowest fall occur. These are known as spring tides. When the sun's influence is in opposition to that of the moon, the least rise and fall take place. These are known as neap tides.

The movements of the tides can be measured and predicted a long time beforehand, and observations are carefully made with regard to the times of high water and the height of the tide at various places. The rate of motion of the tide-wave depends on the depth of the ocean and the absence or presence of land. Thus, in the central parts of the Atlantic Ocean, it exceeds 500 miles an hour ; and it takes fourteen or fifteen hours to come from the south of Africa to the south-west of Europe.

When the tide-wave enters a narrow and shallow sea its rate of motion slackens, but the wave gathers height and force. Thus, in the Bay of Fundy, it rises to a height of 70 feet, and in the estuary of the Severn the spring tides attain a height of 40 feet.

When the shores are not closed as in an estuary, but after converging open out into a wider sea, the tide-wave becomes a rapid current or race, and one of the best examples of this may be seen in the Pentland Firth, between the Orkney Islands and the north of

Scotland. Where two opposing currents meet each other, or where the tide is thrown from side to side against sunken rocks, the water forms whirlpools, of which the famous Maelstrom on the Norwegian coast is an illustration.

### Currents.

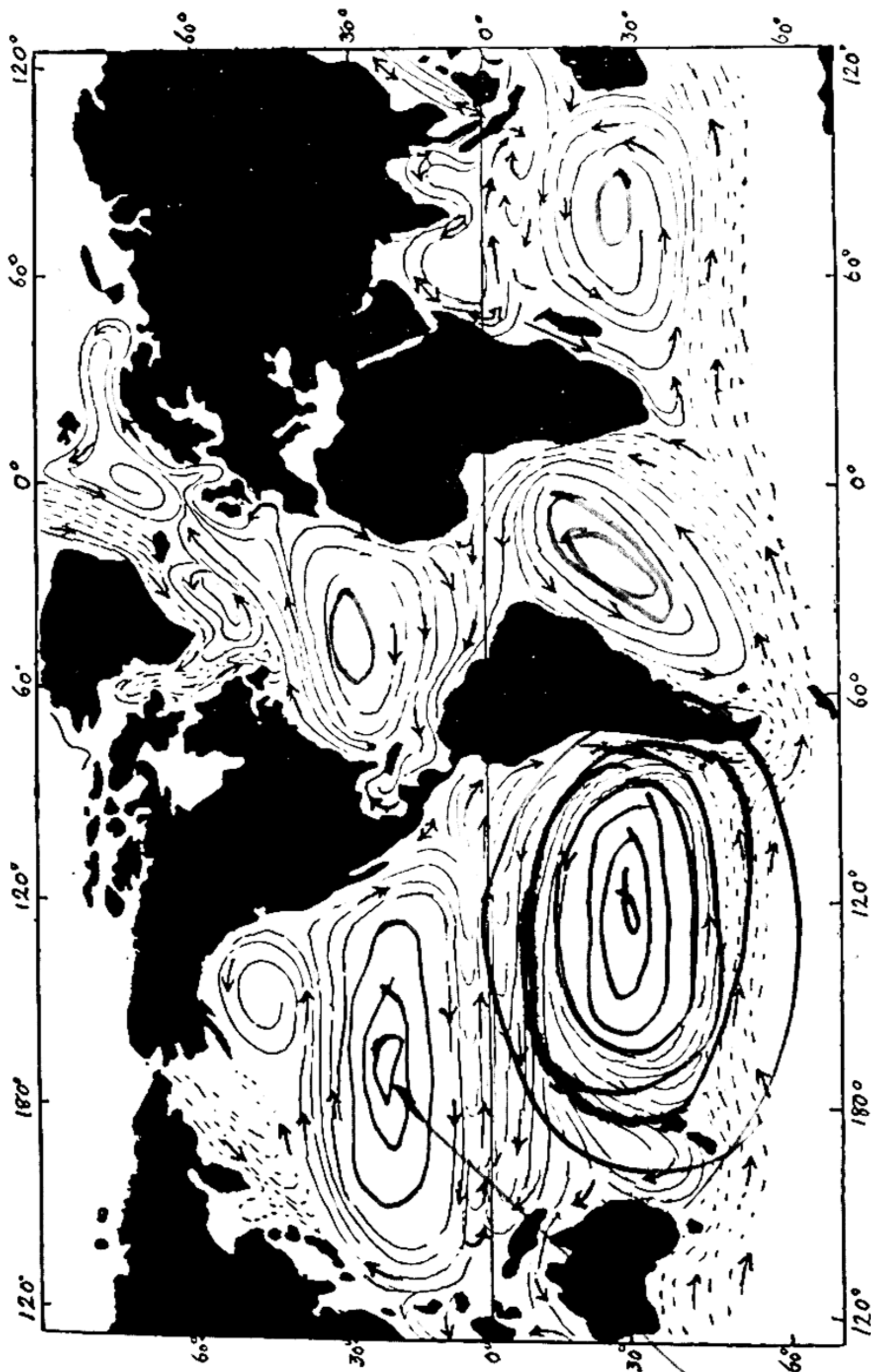
By observations in all parts of the world, the sea has been found to be in continual circulation, and those superficial parts of the sea which have a regular, onward motion are called currents.

Currents are caused by the natural tendency of warm and cold water to change places, helped by the rotation of the earth, and by the force of winds blowing over the surface. A comparison of a map of the world showing the ocean currents with one of the prevailing winds will show that the movements of the sea are largely dependent on those of the air.

### Currents of ~~the~~ Atlantic, Pacific, and Indian Oceans.

Currents have been described as enormous rivers coursing through the ocean, running as fast as 10 miles a day and even faster. The chief are the equatorial currents which flow round the world in the same direction as the trade winds.

In the Atlantic Ocean, one of these currents starts from St Thomas on the west coast of Africa and moves westward to South America. At Cape St Roque it divides into two, the smaller branch turning south to become the Brazilian current, and the larger, or main branch, sweeps past the north coast of South America, passes into the Caribbean Sea and the Gulf of Mexico, whence it issues into the Atlantic as the Gulf Stream. This wide body of comparatively warm water keeps close to the coast of North America. Off Newfoundland it divides, the main body turns round the Azores, and goes south past Spain and the African coast. The other portion runs northward and is blown across the



Map showing the distribution and movements of the principal ocean currents. The continuous lines show warm currents, the broken lines cold ones; the double-headed arrows indicate that the directions of movement are reversed during part of the year.

Moore's

Atlantic by the prevalent westerly winds and its influence on British climate is almost imperceptible.

In the Pacific Ocean the great equatorial current starts from the Panama and runs right across the ocean to the Philippines. There it is met by the Kuro-Shiwo from the China Sea and the two then run along Japan on the east, round the northern portion of the Pacific, and southward to California.

In the Indian Ocean the main current issues from the Bay of Bengal, passes Ceylon and the Seychelles, and flows between Africa and Madagascar to the Cape of Good Hope. There it is checked and turned back to the south-east toward Kerguelen Island.

There are many other currents besides those already mentioned, but some idea has now been gained of the ceaseless change going on in the ocean. Wherever water is moved away, its place is naturally taken by other water, and thus every particle of water visits every part of the world.

### **Influence of Currents.**

Currents affect the climate of a country besides whose coasts they flow; thus in the northern hemisphere those flowing northward have a warming influence, while those flowing southward have a cooling influence.

Currents have a marked effect upon the rainfall, and it is found that coasts washed by warm currents have a heavy rainfall, and those washed by cold currents have a small rainfall.

## CHAPTER VI

### CLIMATE AND THE DISTRIBUTION OF LIFE

#### The Atmosphere.

The atmosphere is the gaseous envelope surrounding the earth. It is complex in its composition, consisting as it does of a mixture of gaseous substances with which water in the form of vapour is present. The amount of water vapour present in the air varies considerably from day to day, but however warm and dry the day may be, there is always some present. The amount of water vapour that the atmosphere will hold before it is completely saturated varies with the temperature, and the warmer the air is the more water vapour it will hold. Thus in England the air is saturated with half as much water vapour as the air of the Indian Ocean will hold. In order to measure the degree of moisture in the atmosphere, the hygrometer is used.

#### The Pressure of the Atmosphere.

The air like all gases is elastic and compressible. The portion near the level of the sea is denser than that at a great elevation, for the higher we go the more rarefied becomes the atmosphere, so that at a height of seven miles it is so attenuated as to make breathing impossible. The atmosphere has a certain pressure which is transmitted in all directions. The average pressure of the atmosphere at sea level is about 15 pounds on a square inch. The barometer is

the instrument used for measuring the pressure or weight of the atmosphere. The pressure of the air varies not only at different heights, but also at the same levels at different places on the earth's surface, as well as at the same place at different times. The two chief causes of this variation are the varying temperature of the air and the varying quantity of aqueous vapour in the air. It may be stated that the barometer stands high when the air is very cold, when the air is dry, and when the upper current of air sets in towards a given place; and the barometer stands low when the air is damp, when the air has an upward movement, and when the lower strata are heated, causing the surfaces of equal pressure to rise and the upper layers to pass away.

### Isobars.

Lines drawn through places having the same barometric pressure at a certain period are called Isobars. They may be drawn for each month, or each season, or for a whole year, and by their use we are enabled to see how the pressure is affected in some districts by the season of the year, and how the land and water cause local differences of pressure. Taking the surface of the earth as a whole, there are two belts of high pressure passing round it, one on each side of the equator, and between these two there is a belt of low pressure in the tropical regions. The other regions of low pressure surround the poles.

### Winds and their direction.

Winds, in passing from a high pressure to a low pressure area, take a spiral course and are called cyclones. The high pressure areas are called anti-cyclones, and from them the winds blow outward. The low pressure areas pass from west to east. Owing to the earth's rotation, the winds blowing into a cyclonic area are deflected like the trade winds, and go to the right in the northern hemisphere and to the left in

the southern hemisphere. Ballot's *Law of the Winds* states that, in the northern hemisphere, if you stand with your back to the wind, the barometer is lower on your left than on your right; in other words, the cyclonic area is to the left and the anticyclonic to the right. In the southern hemisphere, the positions are reversed. It is worth noting that the cyclonic systems are very numerous and powerful between latitudes  $50^{\circ}$  and  $60^{\circ}$  which thus includes the British Islands and gives that area its variable winds and changeable weather.

### Land and Sea Breezes.

The water on the earth's surface takes longer to get warm than the land, but, having acquired its heat, the water retains it longer than the land. Thus, during a summer day the land becomes hotter than the sea, and so the air above it becomes heated, expands, and forms a low pressure area which is relieved by the passing in of air from the sea. At night, the earth cools rapidly and gives up its heat sooner than the sea.

The air over the sea in its turn being warm and less dense than the air over the land, a breeze rises from the land to equalize the pressure over the sea.

### Trade Winds.

The Trade Winds were so named because they blow throughout the year, and, in the days of sailing-ships, they were of great value to navigators. In the northern hemisphere there is a regular wind blowing from north-east to south-west and this is caused by the air moving towards the equator being deflected westwards by the earth's rotation. In the northern hemisphere this wind is known as the "North-east Trade" and in the southern hemisphere the "South-east Trade." These winds meet and are lost in the strong up-draught which causes the "doldrums," or equatorial belt of calms.

## Monsoons and Monsoon Regions.

Monsoons are of similar origin to the land and sea breezes, though of a more powerful character. They are due to the rapid seasonal heating and cooling of the continents and oceans. The monsoon countries are so named because of the regular seasonal reversal of the winds, which blow from land to sea in winter and from sea to land in summer. This reversal of the wind which happens twice a year is known as the "change of the monsoons." The monsoon countries extend over a great stretch of latitude, and the temperature conditions, therefore, vary greatly, while the variety of surface-relief produces in one area heavy rainfall and in another drought and desert conditions.

## Temperature of the Air. Isotherms.

The temperature of the air is taken by the thermometer and is found to vary according to the latitude, the altitude, the direction and character of prevailing winds, the distance from the sea, the character of ocean currents, the amount of rainfall, the character of the soil, and the presence or absence of vegetation.

Isotherms are lines drawn through places having the same air temperature during a given period. These lines are very irregular, and vary considerably at different seasons. Reference to isothermal maps will show how very irregular these lines are in the northern hemisphere, and how comparatively regular they are in the southern hemisphere where there is a great preponderance of water. We may thus deduce that temperature depends more on latitude in the great oceanic regions than in the continental areas. These lines also show that the regions of greatest heat are in the interior of the continents; the deserts of Africa and Persia having a temperature which sometimes reaches 160° F. The lower temperature of the air at greater heights is chiefly due to the diminishing thinness and dryness of the atmosphere and the disappearance

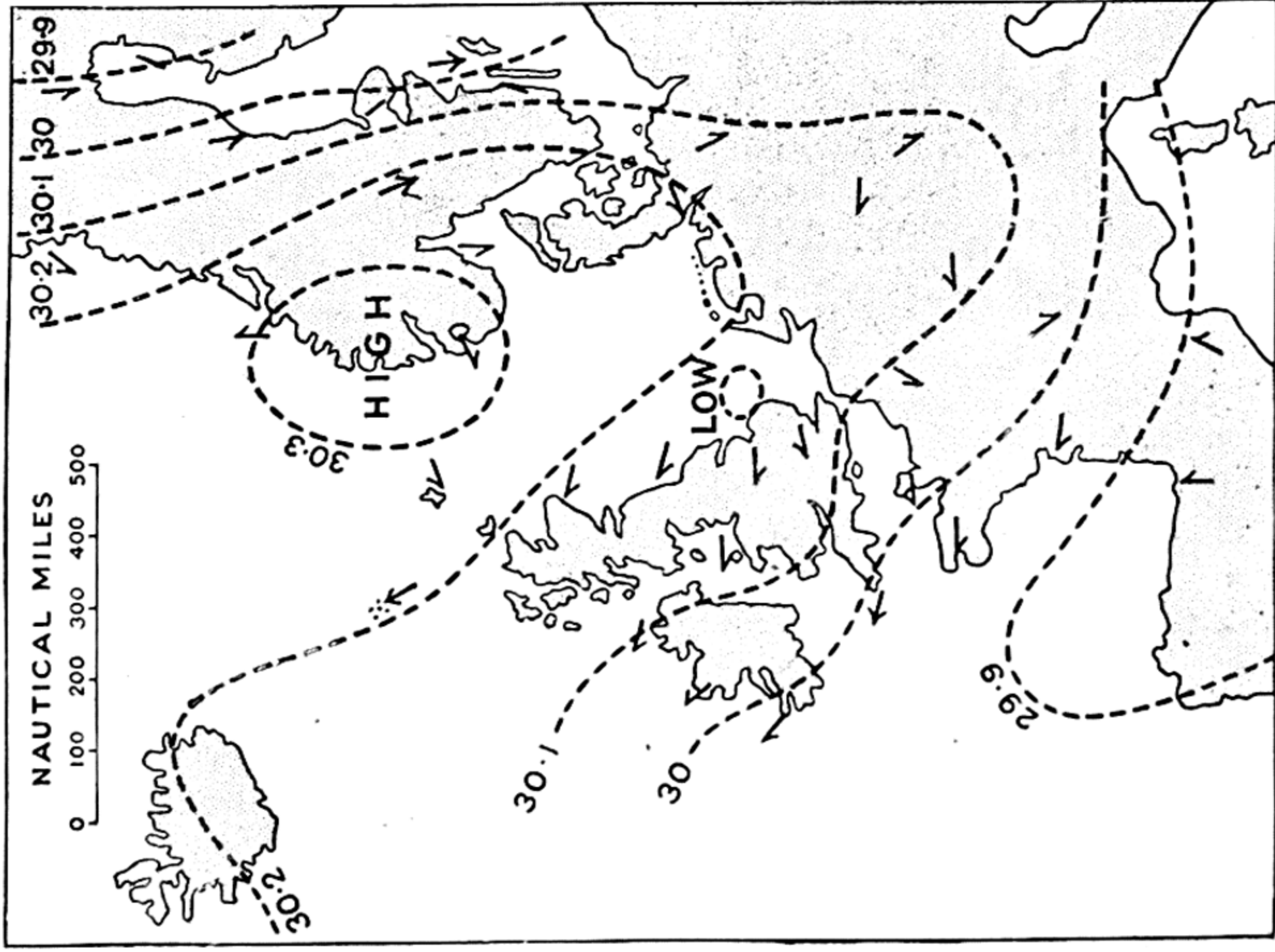
of heat consequent on the expansion of the ascending air-currents. On the average there is a fall of  $1^{\circ}$  F. for every 300 feet in altitude.

### Weather and Weather Charts.

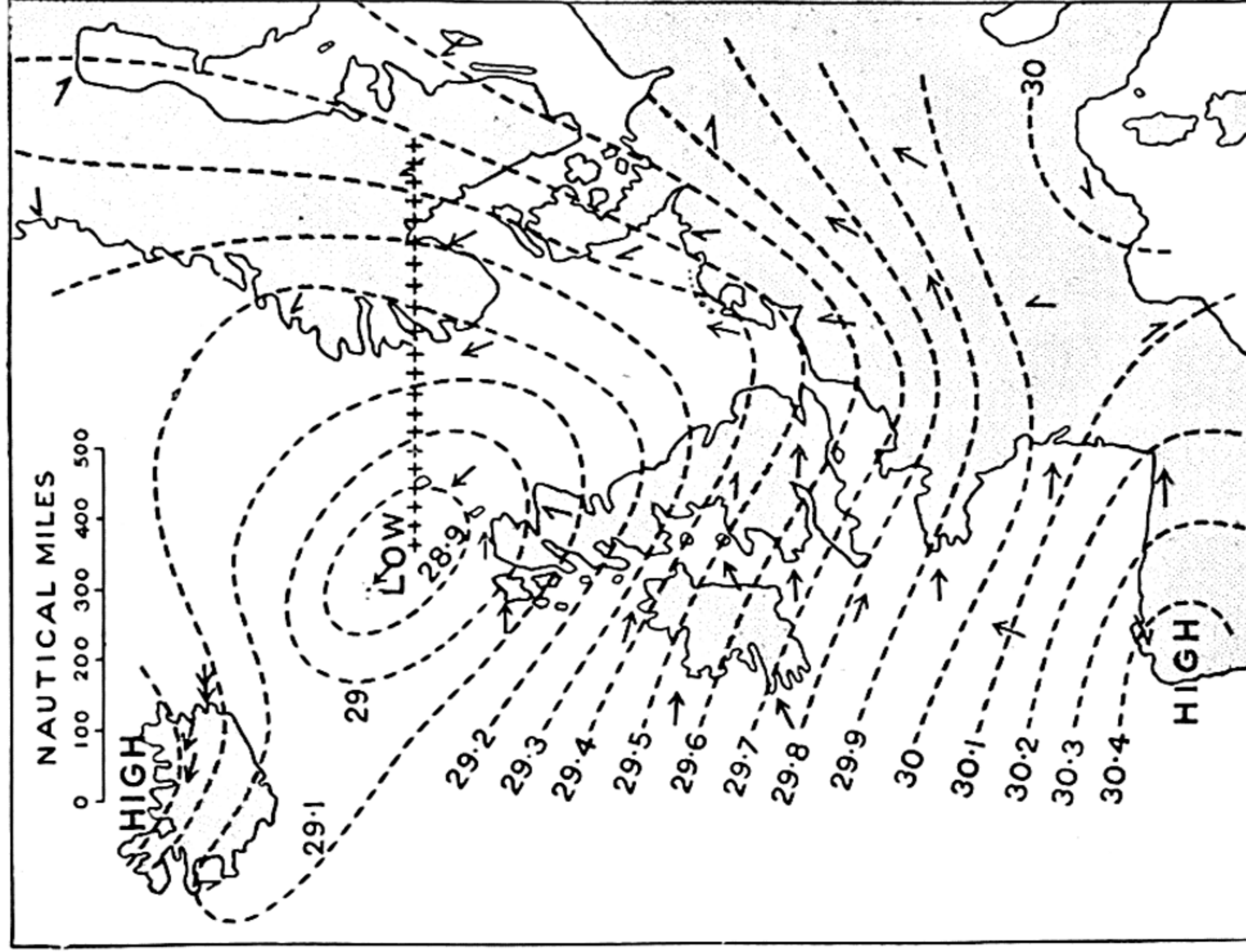
The weather at any particular place is the combination of the atmospheric conditions prevailing at one time. It includes the temperature, barometric pressure, wind, moisture, cloud, and electricity of the atmosphere, and a change of weather implies a change in one or more of these phenomena. The problem of forecasting weather is one of much difficulty, and dependence is placed upon charts showing the distribution of pressure, temperature and wind over the particular area at a particular time. Forecasts are made for one or more days in advance, and a high degree of accuracy has been attained in recent years. As most of our weather approaches us from the Atlantic, we are able to render timely service to Europe; and the introduction of wireless telegraphy has further helped us in drawing up reliable charts and to give longer warning of the approach of stormy weather for the information of our shipping.

### British Weather.

Cyclones are most frequent and best marked in winter within the British area. They are of great importance in producing our mild and windy weather. The depressions move faster in winter than in summer, but in summer they travel further northwards and affect our climate less. The English Channel is one of the chief tracks of cyclones and, owing largely to this fact, we have been protected from foreign invasion, although it has prevented full intercourse with Europe. Anticyclones bring us continental warmth in the summer, while in the winter they may bring us continental cold, when the weather becomes severe, though probably bright and fine.



Pressure Chart illustrating a Cyclone.  
November 22, 1908.



Pressure Chart illustrating an Anticyclone.  
November 6, 1908.

## Climate and Vegetation.

The presence of vegetation is the most characteristic feature of the surface of the earth and its character is largely dependent on the temperature and rainfall. Thus, where there is sufficient moisture in the soil, the vegetation may be said to be perennial, that is, the plants grow on from year to year. Where the moisture for part of the year is deficient so that plant life is impossible, there, during the moister period, the plants germinate and develop until the conditions become insupportable, when they die. This vegetation, which starts afresh every year, consists of annuals and the most important representatives are found among the grasses, although much grass is perennial. It may be noted that more moisture is required for the growth of certain plants when the temperature is high, and less moisture is necessary when the temperature is low. In a dry desert there is too little moisture in relation to the high temperature and so there is little or no vegetation; while, in a cold desert, the temperature is so low that even if there were moisture plants could not grow.

The conditions that favour plant life are determined largely by the amount of heat, the precipitation, the character of the winds, and the nature of the soil; but the distribution is mainly dependent on precipitation and on the wind. Forest trees require much water, and will thrive if there is sufficient rainfall to secure a supply of moisture in the season of growth. Dry winds are hurtful to trees, especially if they occur when the trees are not able to obtain sufficient moisture to replace what is lost. As grasses have less well-developed roots than trees, they must have frequent showers during their season of growth, but they are not seriously affected by drought or winds during their period of rest.

In this brief survey of the distribution of plant life it is well to notice that forest regions, grasslands

and deserts do not form a continuous series, for it may happen that a forest region passes into a desert region without the intervention of grassland, as in North Africa where the forests pass directly into the Sahara desert.

### **Forest Regions.**

These may be classified as tropical and temperate. The largest tropical forests are in the equatorial regions of Africa and South America and in parts of the monsoon area of Asia. In these forests vegetation is luxuriant and the trees are interlaced with climbing plants of all kinds. These tropical forests are almost impenetrable and light is well nigh excluded by the dense growth of the trees. There are no special times of flowering, fruiting, or seeding, for seasonal changes are scarcely noticeable.

It is somewhat difficult to define the limits of the temperate forests, especially in northern Africa and southern Europe, where it is impossible to say how much is steppe land and how much is temperate forest. The natural region of temperate forest includes Western Europe, the forest belt of Russia and Siberia, the forest regions of Canada and the United States, and of South Chile and south New Zealand.

### **Grass Regions.**

These may be classified as the hot grass regions, or savannas, and the temperate grass regions, or steppes. In the moister regions of the savannas, grasses are heavy and tall, and, with the trees, form the dense jungle which is the haunt of the larger animals of prey. In both savanna and steppe regions the soil is often very fertile, especially in the drier parts, where the soluble constituents are not washed out of the soil. The savanna regions may be considered among the most important of the undeveloped regions of the world, for large areas are suitable for the growth of food plants and for the cultivation of cotton and maize.

In Africa, the northern grass region includes parts of Nigeria and southern Sudan, while there is also a large area in southern Africa. There is savanna vegetation in the Dekkan in India, in south-western Queensland in Australia, in the llanos of the Orinoco in South America, and in the pampas of the Plate. The temperate grass regions, or steppes, are found in a continuous belt from Austria to western China, and in the inland parts of New South Wales and Victoria, as well as considerable tracts in West Australia. In the New World, savanna land is found on the plateaux east of the Rocky Mountains and between the Rocky Mountains and the coast regions, especially in Oregon, Washington, and Idaho. In South America the steppe region borders on the savanna land, is of small extent, and in nearly all parts is dry.

### Desert Regions.

There are four great barren zones on the earth's surface: (1) the Ice Fields within the Arctic circle, fringed to the south by tundras where only the lowest forms of plant life exist; (2) the Tropical Deserts north of the equator, such as the Sahara in Africa, the deserts of Arabia, Persia, India, and Tibet in Asia, and the alkali wastes of the United States; (3) the Tropical Deserts south of the equator, such as the Kalahari in South Africa and the deserts in the middle of Australia; and (4) the ice-covered Antarctic regions.

### Altitude: how it affects Vegetation.

If we start from the lower cultivated slopes of a mountain, we shall probably notice deciduous trees which give way to conifers. These become more dwarfed as we ascend, until some mountain pines mark the limit of trees, which are gradually replaced by shrubs. Then there comes a zone of Alpine plants, with a complex sward; but as the soil becomes scantier the grass disappears and desert conditions prevail. Rich vegetation follows the melting of the snow, but

above the snow-line mosses and lichens are the only forms of plant life. It will thus be evident that the luxuriance and variety of plant life decreases from sea-level to higher altitudes, and from the equator towards the poles.

## **Animals and their Distribution.**

### **(a) Land Animals.**

The natural distribution of animals over the earth depends, like that of plants, on the climate, the configuration of the land, and the supply of food. There is considerable resemblance between the mammals of Europe, Asia, Africa, and North America, but South America has a peculiar and primitive fauna, while Australia, owing to its isolation, has a fauna that is even more peculiar and primitive. The similarity of the fauna of the Old World and the New World is noteworthy; and this similarity is seen when we compare the lion and puma, tiger and jaguar, camel and llama, crocodile and alligator, ostrich and rhea. The fauna of Australia is peculiar in itself, for it contains no large quadrupeds, but has such representatives as the kangaroo, wombat, duckbill, emu, cockatoo, and apteryx. North America differs from Eurasia as regards its land mammals in several ways, for some of the peculiar forms, such as skunks and raccoons, of South America have found their way northwards. Until a relatively recent period, North America had a scanty population and thus there was more room in that continent than in Europe for great flocks of large animals. Great herds of bison were common to the plains and prairies, while to the north there were herds of reindeer. The musk-ox once lived in Europe, but it is now found only in North America, while a curious animal, the prong-buck, is peculiar to that continent. Deer are also present, as in the Old World, and wild sheep occur as they do in Europe, but no wild horse or ass roams the plains of America as they

roam the waste lands of Asia. On the whole, North America shows a greater resemblance, as regards its wild animals, to Asia than to Europe.

When we consider the domestic animals, we find that when the crowding of population in Europe drove emigrants over the seas, they took their common domestic animals with them. Horses and cattle, native to Europe and Asia, were completely naturalised in America, roving in wild herds over the prairies and pampas. Sheep and pigs have also spread and prospered, there being now enormous flocks in South Africa and Australia as well as in America. The rabbit, introduced from Britain into Australia, has there found so congenial a home and flourished so greatly as to endanger the existence of other grass-eating animals.

### (b) Fisheries.

The aquatic forms of animal life are of great importance to man, who in many regions depends on the supply of fish for his food. The life of the ocean may be divided into three groups; the life of the littoral, the life of the open ocean, and the life of the ocean depths. The two last forms need not here be considered, but the littoral forms living within the reach of land influences are of great importance to man, including many fish, crustaceans such as crabs and lobsters, and shell-fish such as oysters, mussels, etc.

The distribution of fish depends on the depth, warmth, and saltiness of the ocean, and the abundance of food. As a rule, the cold northern seas swarm with great shoals of a few distinct species such as the cod, haddock, herring; while the warm tropical waters have a greater variety of fish, but smaller numbers of each.

Marine animals are most abundant on the slopes of continental shores and on shallow banks rising up from deep water out at sea. The Dogger Bank in the North Sea is most famous for soles, plaice, and other

flat fish, and the Great Banks of Newfoundland for cod.

By an international agreement the fishermen of each nation have the exclusive right of fishing within three miles of their own coast, while beyond that distance the sea is free to all.

### **Man and his distribution.**

The factors determining man's distribution upon the earth are latitude, altitude, rainfall, temperature, proximity to the sea, fertility of the soil, and the presence of minerals. The population of the world, estimated at 1500 million, is very unequally distributed, about one-half being spread over Asia and one-quarter crowded into Europe. In such densely populated regions as India and China, the people, as a rule, give all their energy to raising the bare necessities of life from the soil; while in the barren and cold regions of the far north, both in the Old and the New World, the scanty population makes a bare living by a constant struggle against the adverse conditions of life.

### **Races of Mankind.**

The people of the world may be divided into four great groups or divisions:

#### **(1) Negro or Black Division**

consists of (a) the *Eastern Section* found in New Guinea, Melanesia, Australia, and the Malay Peninsula. This race is cruel and treacherous, and head-hunting and cannibalism are prevalent. There are few industrial arts, while spirit worship is common with *tabu* in Melanesia and totemism in Australia. (b) The *Western Section*, and by far the most numerous, found in Africa, United States (south), West Indies, and South America. This race of people is sensual and readily bends to slavery. They have no science or letters and few industrial arts. Their religion is animistic;

ancestor-worship is more prevalent than nature worship, and no supreme being is recognised.



Kamba Natives, East Africa.

(2) Mongolian or Yellow Division.

This race comprises about 600 million people who are found in China, Indo-China, Korea, Siam, Japan, Mongolia, Manchuria, Siberia; Tibet, Irania, Asia Minor, parts of Russia, Hungary, and elsewhere. Their characteristics vary; the Chinese and Japanese are thrifty, frugal, and industrious, while the Malays, Koreans, and Siamese are indolent. Science has been slightly developed in this race, and arts and letters moderately cultivated. In China and Japan, porcelain, bronze work, ivory carving, and decorative painting have reached a high stage of perfection.

Animism generally prevails among the Mongols,

and ancestor-worship is now the most prevalent form of spirit worship. The Chinese and Japanese are nominal Buddhists ; the Turks and Tatars are Moham-medans ; and the Finns, Lapps, and Magyars are Christians.

(3) **American or Red Division.**

The Amerinds, as people of this division may be called, are found in the New World, in Greenland, Alaska, the Arctic shores, reservations in Canada and the United States, Mexico, Central and South America.



Dakotan woman, North America.

This people are generally reserved, moody, wary, with great power of enduring pain and a high sense of personal dignity. They have a great range of culture, and architecture and engineering have been well developed. There is no literature beyond oral folk-lore and myths.

(4) **Caucasian or White Division.**

This is the most numerous of the races and its population is estimated at 800 million, who are found

in Europe, North Africa, parts of south-west and central Asia, Irania, India, South Africa, Australia, New Zealand, North and South America. There are several types of this race, the Teutonic being slow, cool, collected, resolute, and enterprising; the Alpine and Mediterranean being fiery, fickle, bright, and impulsive. All this race are imaginative and intellectual, and science, arts, poetry, and letters have flourished from early times. Most of the great civilisations have originated in Caucasian countries.

Many forms of religion prevail among the people of this race. Christianity in Europe and the Colonies; Hinduism in India; and Islam in Central Asia, Siberia, Turkey, Arabia, North Africa, Irania, India, and Malaysia.

### Migration and Emigration.

The races of mankind inhabiting the north temperate zone are first, both in civilisation and in numbers, and amongst them the people of Western Europe are the most advanced, the most energetic, and exert the widest influence on the affairs of the world. They have spread from the various countries of North-Western Europe over North America, where their enterprise has been still further developed. From South-Western Europe, chiefly Spain, they overran South America, supplanting and partially blending with the native races. In Australia and South Africa settlers from North-Western Europe have also found suitable homes. In Central Africa, some of the high plateaux may become peopled by white men, but in tropical lands near sea-level Europeans do not easily settle on account of the climate.

At the present time, emigration is chiefly directed to countries where land is cheap. Emigrants from Britain, Germany, Eastern Europe, and Scandinavia go chiefly to the United States, Canada, Australia, and New Zealand. Italian emigrants go in large numbers to the Argentine

Republic, where, it is said, three-fifths of the settlers are from Italy. There is also a steady flow of Italians to Brazil and the United States. The chief emigrants from Asia are the Chinese and the Indians, who go in considerable numbers to various tropical countries and work as coolies, under contract, in the plantations or the mines. The emigration of the Chinese to the United States and Australia has been stopped by the governments of those countries.

### **Means of Transport.—(1) By land.**

As a transport animal, man is the costliest and least efficient, but by his intelligence he has utilised other animals for his own purposes, and in the later ages of the world has developed various mechanical means for purposes of locomotion. Porters carrying merchandise for long distances are now only employed in places like Equatorial Africa, where beasts of burden cannot live, and where there are no navigable rivers or railways.

Beasts of burden, such as donkeys, mules, and horses, do much of the transport of goods in Southern Europe, in Asia, and in regions where roads are few and bad. The yak is used among the paths of the Himalayas, and the llama has for centuries carried the produce of the mines of the Andes to the sea-coast towns. In the plains of India, the ox is the chief transport animal, although the elephant is sometimes used.

### **Caravans and Traction.**

The camel has been recognised as the most suitable carrier for hot, arid regions, and has recently been introduced into the western United States, parts of Australia, and South Africa. From 40 to 600 camels journey together in a caravan, and formerly all the silks and spices of the East reached Europe by this means. This trade is declining and the chief caravan routes are now in Asia beyond the railways. In Africa,

Arab caravans travel between the north coast, the central oases of the Sahara, and the Sudan.

On the great plains of South Africa, Australia, and America, bullock-waggon drawn by from two to forty oxen form the transport of the trader. In the far north, sledges are used, and dogs are the only available animals for this purpose. Where, however, the coarse moss of the plains can be reached under the winter snow, the reindeer is used for transporting merchandise.

### Roads.

The trails of the Indians through the woods and the paths through the African forests were very narrow and inconvenient and form a striking contrast to the excellent roads which now connect all the important places in civilised countries. It must, however, be remembered, that though the Romans made magnificent roads, there followed a rapid decay of the art, and the well-kept roads of the present day are the work of the last hundred years. The highest carriage road over the Alps is 9000 feet above the sea ; and in the Andes and Himalayas roads ascend in some cases to 15,000 feet or more above the sea.

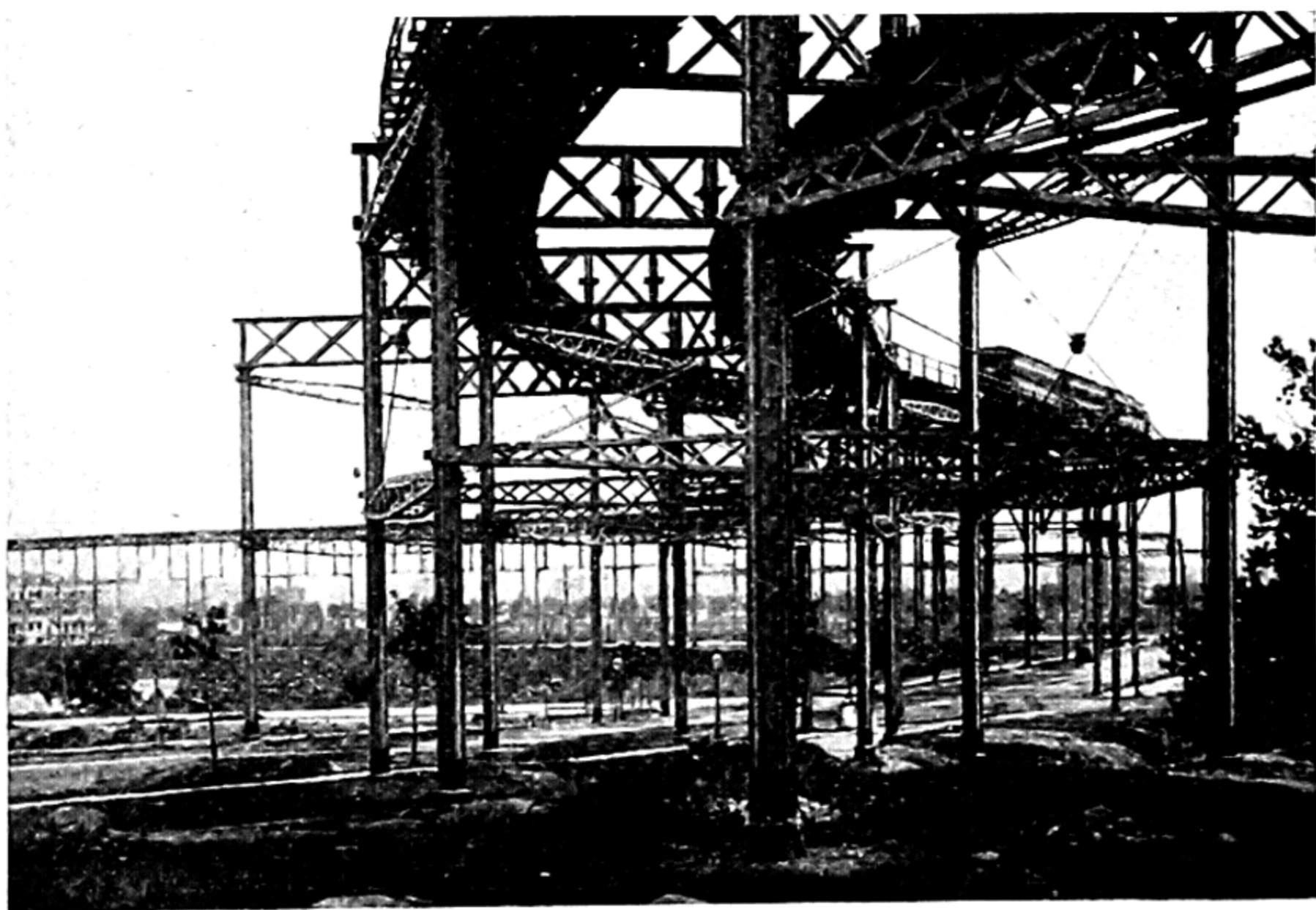
### Rivers and Canals.

Rivers are the natural channels for distributing heavy goods, especially when the climate keeps them free from ice and full of water during most of the year. In wooded countries, timber is sent down in rafts, sometimes for hundreds of miles to the sea. Boats and barges, laden with merchandise, float down the great continental rivers, and steamers now ply on all the great rivers and lakes of the world.

Canals are constructed on a dead level. On account of irregularities of country, they are usually made in successive level lengths, at different elevations. The barges are transferred from one level to another by locks, or sometimes lifted vertically by mechanical means and then launched on the higher reach.

## Railways.

In flat countries railways are carried directly between the towns they connect, but in hilly regions they follow the natural valleys and passes, usually along rivers, and occasionally through mountains by means of tunnels. Railways have largely superseded canals and the merchandise of such countries as Britain and the United States is carried by trains of 40 waggons or more travelling at 20 miles an hour or less. Passenger



Elevated Railway, New York.

trains attain speeds of 60 miles an hour, but the average speed for a long run seldom exceeds 50 miles an hour, and less than this is the rule. There are special railways designed for particular places. London has tube railways bored as continuous tunnels at a great depth; New York has an elevated and also an underground railway; many of the Swiss mountains have funicular or rope railways, and several mountains, including the

Rigi and Mount Washington, are climbed by toothed-rail lines. Steam traction is generally employed, although the use of electricity is increasing. Most of the large towns, both in the Old World and the New, have extensive systems of tramways which are mostly dependent for motive power on electricity.

### Means of Transport.—(2) By sea.

The cost of transport by sea is always lower than by land, and as three-fourths of the earth's surface can never be touched by roads or railways, the command of the sea is essential to the conduct of trade. Sailing vessels require a favourable wind for a rapid passage, and by taking advantage of the "trades" and the "roaring forties," they are able to accomplish their voyages with great regularity. From England to New Zealand and back, a sailing ship goes by the Cape of Good Hope with a fair wind all the way, and returns by Cape Horn driven by the same steady breeze. The use of iron and steel in their construction has enabled sailing ships to be built in modern times of greatly increased dimensions, some having a tonnage of over 5000. These large vessels are chiefly employed in carrying wheat and nitrate of soda from South America.

The application of steam to ocean transport was one of the principal achievements of the nineteenth century, and it is hardly possible to over-estimate the importance of the rôle it has played in the development of commerce and civilisation. Services can now be carried on with the utmost regularity to and from the most distant parts of the earth, independently of the influence of the weather, and the time occupied on voyages has been reduced from weeks to days. In the palmy days of clipper ships a rapid journey from Shanghai to London occupied 70 days, while an ordinary voyage ran to 100 days. Nowadays the mail steamers do the same distance regularly in about 35 days.

Before the introduction of steamships on the trans-Atlantic service a voyage from New York to Liverpool under the most favourable circumstances lasted 13 days, while a journey now takes less than 5 days. The largest British passenger steamer, the *Aquitania*, has a tonnage of 47,000, and a speed of  $23\frac{1}{2}$  knots per hour. Many steamers exceed 10,000 tons; 5000 ton steamers are common; but the average tonnage of British ocean-going steamships is about 1000.

### Forms of Government.

The characteristic forms of government amongst mankind are the monarchical and the republican. The monarchies may be considered under three divisions, (1) *Despotic*, where the will of the chief is the only law, as is the case among barbarous people; (2) *Absolute*, where the people are governed by laws they had no share in making; and (3) *Limited*, where the monarch is the head of the State, but the laws are made and administered by representatives elected by the people. This latter form is common to most of the countries in Western Europe.

Republics are presided over by a president, who is elected by the people for a term of years, and who exercises all the powers of a king when in office. In republics the laws are made, as in monarchies, by elected representatives. In some republics, as Switzerland and the United States, many states, each with its own representative government, are federated into one nation for foreign affairs and the management of external trade.

The more important British possessions exercise democratic rights under the control of a governor appointed by the Home Government to represent the Sovereign. In recent years, the tendency has been for the various states forming these larger dominions to federate for various purposes. Thus the Dominion of Canada includes all our American possessions north of the United States with the exception of Newfoundland.

The Commonwealth of Australia is the federation of the Australian States, and the Union of South Africa represents the most recent of these movements for a closer union among states having many interests in common.

### Languages.

Of the hundreds of languages and dialects spoken by the people of the world, few are really wide-spread. Although Chinese is the language of the largest number of the world's people, English is the chief commercial language and is spoken by at least 130 million people. Russian, Spanish, German, and French are of great importance, the last-named being generally used in international conferences.



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## CHAPTER VII

### EUROPE

#### **Position and Extent.**

Europe is the western part of the great land mass known as Eurasia, and is historically and politically the most important of the five continents. In point of size, it is next to Australia the smallest, and is less than one-fourth of the area of Asia, the largest of the continents. From a geological and biological point of view the south of Europe and the north of Africa are very closely related; indeed, Morocco, Algeria, and Tunis are European rather than African as regards their structure, animals, and plants. (On three sides Europe is bounded by the sea: on the north by the Arctic Ocean, on the west by the Atlantic Ocean, and on the south by the Mediterranean Sea, the Sea of Marmora, and the Black Sea. The eastern boundary consists of the Ural Mountains, the Ural River, and the Caspian Sea; but of course these do not mark exact lines of division as regards climate, flora, or fauna. With the exception of a small area within the Arctic circle, the greater part of Europe is within the temperate zone; the 10th and 66th meridians of west and east longitude, and the 35th and 70th parallels of north latitude roughly mark the limits of the continent, omitting Iceland. The extreme length is 3400 miles measured from Cape St Vincent in Portugal to the mouth of the Kara River; and the breadth is 2400 miles from North Cape in Norway to Cape Matapan in Greece.

The area is estimated at 3,900,000 square miles. The word *Europe* is variously derived. It is now assumed that the name is from the word *Erebb*, meaning darkness or the land of sunset, which was probably applied by the Phoenicians to the countries which lay to the west of them.

### General Features: the Build of Europe.

The physical features of Europe may be broadly considered in three divisions: (1) the highlands of Scandinavia, (2) the highlands of the southern countries, and (3) the great European plain.

(1) The greater part of Scandinavia is a highland region representing the remains of the ancient plateau of north-western Europe. This highland region reappears in the north-west of Scotland, in Ireland, and in Normandy and Brittany in France.

(2) The highland region of the south is much loftier and far more extensive, occupying as it does the southern countries and extending northwards to about  $51^{\circ}$  N. (The most important of the southern mountain ranges are the Pyrenees in the west, the Alps forming the centre of this highland region, the Karpathians in the east, the Balkans in the south-east, and the Caucasus range in the far east.) This great chain, forming the barrier between France, Germany, and Russia and the Mediterranean countries, has the highest peaks in Europe—Mont Blanc (15,775 feet) in the Alps, and Mount Elbruz in the Caucasus (18,256 feet). The Apennines of Italy and the Pindus of the Balkan peninsula are southern offshoots of this great chain of fold mountains. The peninsula of Spain and Portugal has an ancient plateau—the Meseta; central France has the plateau of Auvergne, consisting of old rocks; and Germany has the Schwarz Wald, the Taunus, the Harz Mountains, and the Erzgebirge, all of which are ancient rocks.

(3) The great plain of Europe covers at least two-thirds of the continent and extends from England, stretching continuously across Europe, to the Ural

Mountains. It will be noticed that this great plain forms the separation between the two great mountain systems of Europe. In the east, the Netherlands is, in part, below sea level, while the highest land in this plain is found in the Valdai Hills (1100 feet) in Russia.

### Volcanoes.

There are three groups of European volcanoes. (1) The more recent and active are found along the Mediterranean in Vesuvius, Etna, the Lipari islands, and Santorin in the Grecian archipelago. (2) The older volcanoes are those of the Auvergne mountains in France, some craters in north-west Germany, and other extinct volcanoes in south Germany. (3) The oldest volcanoes are those in the north-western highlands of Scotland, more particularly in Mull and Skye. This ancient volcanic system is also represented by the volcanic rocks of Antrim in Ireland.

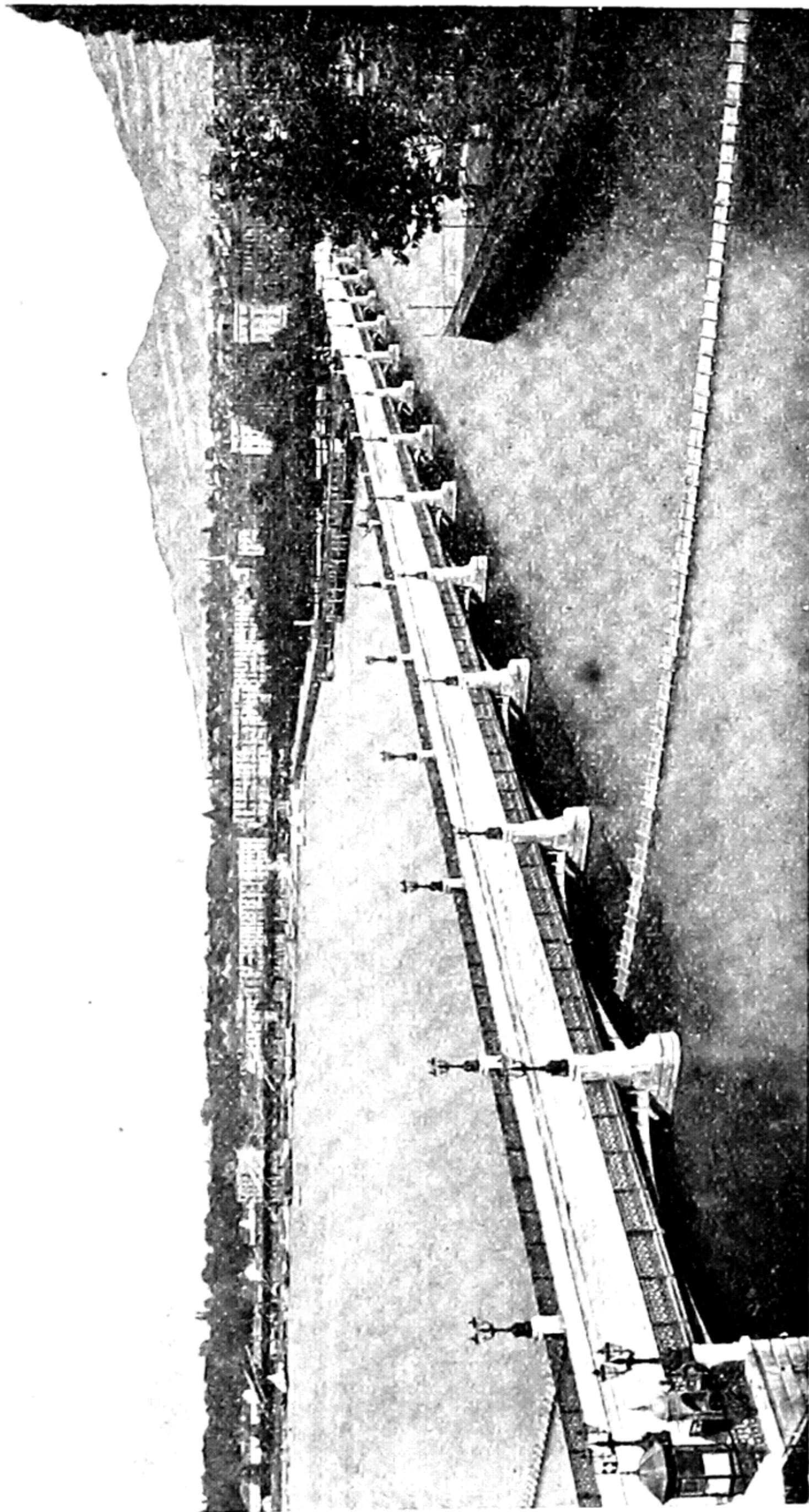
### Watershed and Rivers.

The main watershed of Europe runs from south-west to north-east, and from it most of the rivers flow northward or southward. The Russian watershed sends the Dvina to the White Sea, the Duna and Niemen to the Baltic, and the Ural, Don, Dnieper, Dniester, and Pruth to the Caspian or Black Seas. The north Russian rivers are of little value from a commercial point of view, as they are blocked with ice for many months, and the same applies in a lesser degree to the Baltic rivers. The Elbe and the Rhine are of great commercial importance; the former rises 20 miles from the Danube, and the latter near the Rhone, finding its way to the North Sea through a valley. The central plateau of France is the watershed of the Seine and the Loire, and the Pyrenees give rise to the Garonne and the Adour. The rivers of Spain and Portugal generally work their way across the country through the valleys formed by

denudation. The Rhone rises in the Alps near the Rhine and enters the Mediterranean in the gap between the Pyrenees and Hyères. The Po has its course within the curve made by the Alps and the Apennines. The Danube runs through southern Germany and cuts through the mountains into Hungary. A second time, at the Iron Gates, it makes its way through a gorge and after passing through Rumania and Bulgaria, empties itself into the Black Sea.

### Lakes.

The "ribbon" lakes of Europe are chiefly confined to mountainous regions and are closely connected with the river system. The Alpine lakes are in the river valleys and have probably been formed by subsidence. This is exemplified both in the Scandinavian and Alpine mountain systems, where long, narrow "ribbon" lakes occupy the lowest parts of some of the valleys, and is particularly well seen in Lakes Constance and Geneva. Here it is thought that the expansion of the river valleys may be due to an earth movement which raised the lower part of the valley and converted the upper part into a closed basin. Some lakes, such as Lake Como or Loch Garry in Scotland, have been caused by the damming up of valleys, and an interesting series of lakes in dammed valleys may be seen in the loch and fjord basins of both Norway and Scotland. Some of the European lakes fill depressions in plains, and of this broad, shallow type many are scattered in north Germany. Lake Balaton in Hungary has an area of 230 square miles and is a good example of lakes filling depressions in plains. The most important of European lakes are those on the plains, and these include the largest lakes in Europe. Ladoga (6960 square miles) in Russia is the largest of all European lakes, and Onega, Peipus, and Ilmen are also in the same country. The lakes of southern Sweden—Wener, Wetter, and Mälär—are in the lowlands and are among the largest in Europe.



Geneva.  
(Pont du Mont Blanc.)

On the German shore of the Baltic there are "haffs" or lakes formed along the coast behind beaches and dunes, and among the largest of these are Kurische Haff, and Frische Haff. The present Zuyder Zee was formerly a lake cut off from the sea by a barrier along the line of the Frisian Islands. The largest lake in the British Isles is Lough Neagh, which was formed by a volcanic subsidence.

### Coasts.

Many varying estimates of the length of the coast-line of Europe have been made, but the important fact to remember is that it has a greater length of coast-line in proportion to its area than any other continent. Owing to the number and size of the inland seas, every part of the continent is brought into easy communication with the ocean. The northern seas including the Baltic, North, and Irish, are shallow, having a depth that rarely exceeds 600 feet. They are indeed a submerged portion of the great central plain of Europe, and while the outer seas have definite tides, the Baltic is tideless and its waters are not so salt as those of the ocean. The flat, sandy coast of the Baltic forms a striking contrast to the rugged coasts of Norway, Scotland, and Ireland. (The southern seas include the Mediterranean, Sea of Marmora, Black Sea, Sea of Azov, and the Caspian Sea.) They are landlocked and practically tideless, but deep seas. The Caspian, 85 feet below sea-level, is entirely inland, and its waters are very salt.

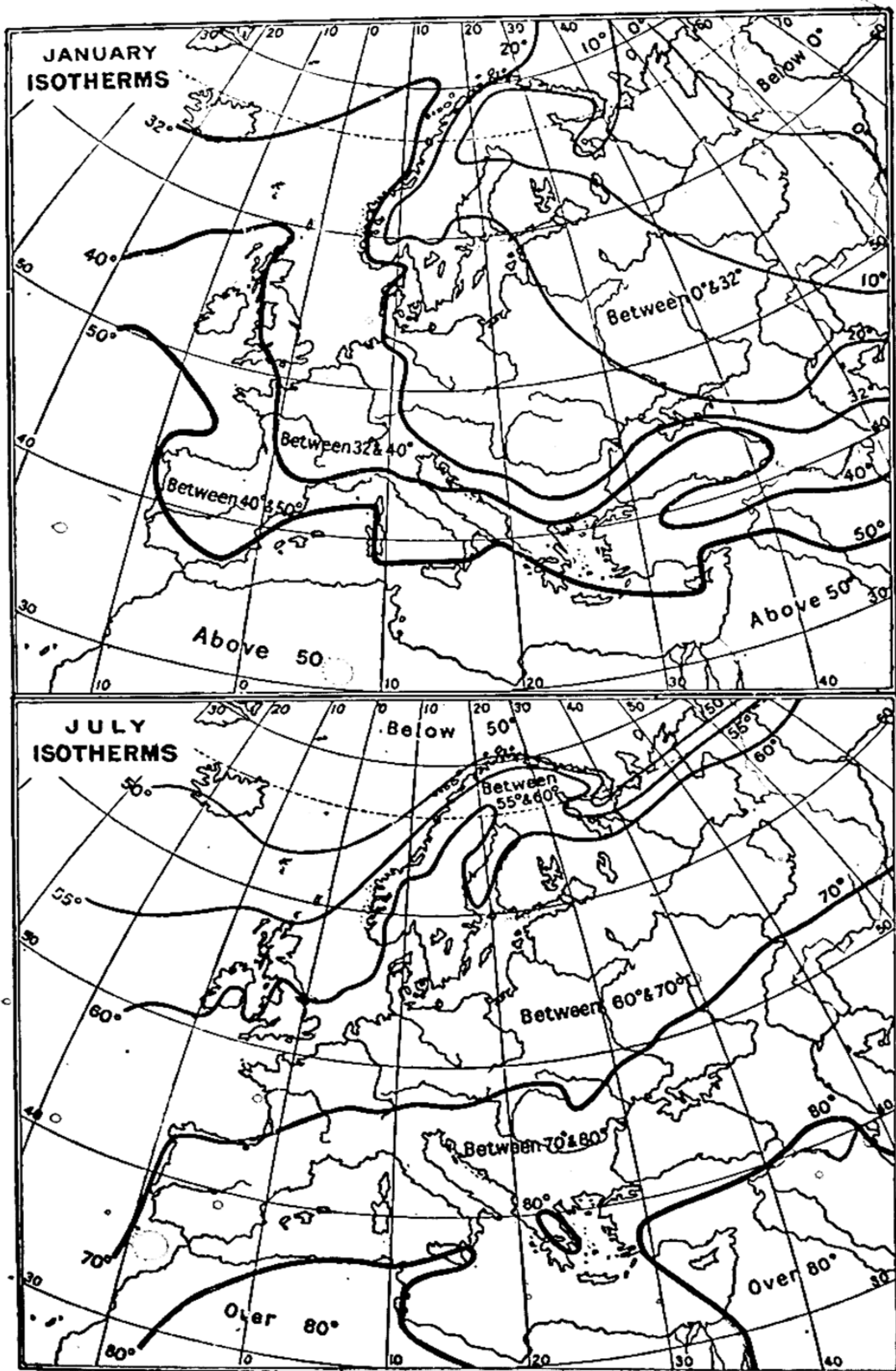
### Islands.

With the exception of Iceland and Spitzbergen, far out in the ocean, the islands cluster round the mainland. To the north of Russia there is the desolate island of Novaya Zemlya. Norway has deep fjords and innumerable small islands forming the Skagaard. The coast of Sweden has a Skagaard of small islands,

but the coast is low and has no deep indentations. The Baltic Sea has several large islands—Gothland, Oland, Zealand, and Funen. The British Isles form the most important group of European islands, which were once joined to the mainland. There is some evidence to show that Scotland was severed from Scandinavia since the appearance of man in north-western Europe. In the Mediterranean Sea there are many islands of interest and importance. Sardinia and Corsica were formerly joined to Italy and are fragments of a land that once occupied the western portion of this great sea. Crete and Cyprus are detached fragments of the Grecian peninsula, and the same is true of the Archipelago of the Ægean Sea.

### **Climate and Rainfall.**

The temperature of Europe increases from north to south, but on reference to a temperature map it will be seen that the isotherms run roughly from north-west to south-east in winter and from south-west to north-east in summer. The south-westerly winds from the Atlantic produce a warm temperature running northward along the coast of Scandinavia; and the influence of these south-westerly winds and the equalizing effect of the Atlantic ocean render the variations between summer and winter temperatures less marked in western than in eastern Europe. Thus the plains of southern Russia have shorter and hotter summers, and colder and longer winters, than places in the same latitude in western Europe. The lands around the Mediterranean have a warmer, sunnier climate than that in the north of the Alps. Dry winds blow across the Mediterranean in the summer towards the Sahara, but at certain seasons the Mediterranean coast is subject to the Sirocco, a hot, sand-laden wind from the same region. The general temperature of Europe and the local temperature in particular districts is influenced by the elevation of the land. To illustrate this fact it may be mentioned that, while the summit



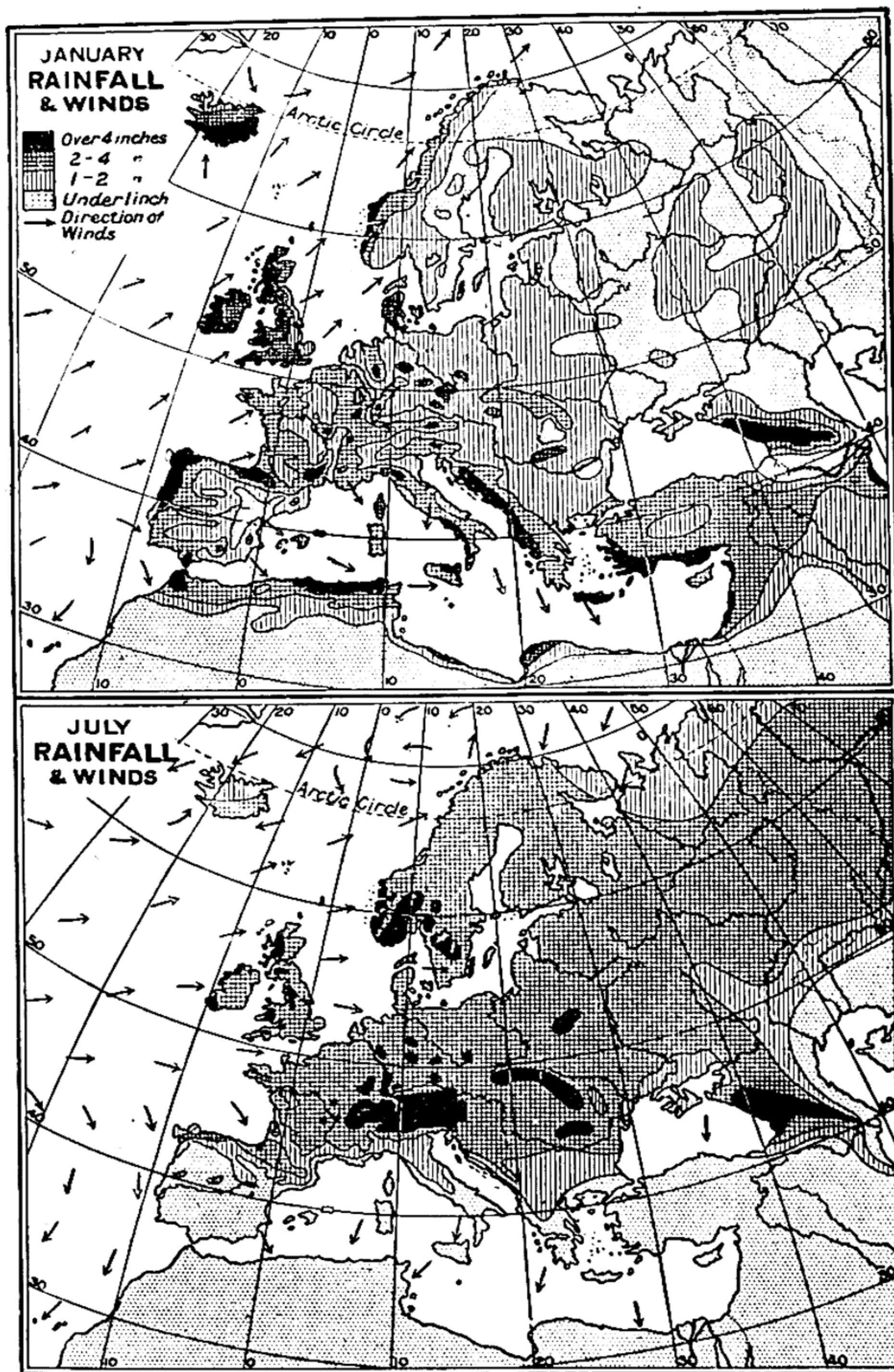
Isotherms of Europe.

of Mont Blanc may have  $20^{\circ}$  of frost, the valley at its base may, at the same time, have a temperature of  $70^{\circ}$  F.

As a general rule, the rainfall of western Europe is greater than that of the eastern plains. Of course mountains always produce a considerably higher rainfall locally, and the highest rainfall in Europe generally occurs to the south and west of the mountains and on their western and southern slopes. The distribution of the rainfall is fairly equal throughout the year, but the greatest contrast is that between the eastern plains and the Mediterranean region. In the former district the summer rains are most abundant while the winter rains are scanty. Lisbon has 29 ins. of rain to Madrid's 16 ins. Bordeaux has 33 ins. of rainfall, Berlin 23 ins., and Moscow 21 ins. The rainfall of parts of Ireland, Scotland, and Wales is the heaviest in Europe and in some places reaches 200 ins., while the north and south-east of Russia are among the driest districts of the continent.

### Plants.

The climate of a country is the most potent factor in determining the use that can be made of its soil. Hence in considering the plants, it will be well to remember that the rainfall is generally heaviest in the west and gradually decreases eastward to the Russian plain. The temperature of north-western and western Europe, being raised by the proximity of the ocean and the prevailing south-westerly wind, has a marked effect on the plant life. Plants which require a mild winter will not grow in the north, but advance along the western coast under the influence of the maritime climate. Thus the myrtle, not an indigenous plant, grows even in the south of England. Many of the European plants have been introduced from Africa or from the east; this has been the case certainly with the vine, olive, orange, lemon, fig, peach, almond, and apricot, and probably with the



Rainfall and winds of Europe.

myrtle. All these are thoroughly characteristic of the Mediterranean region, and to them may be added the cactus and the agave. In south-eastern Europe and in Hungary there are steppes—great treeless plains with coarse grasses and scanty shrubs.

The trees of Europe are of the greatest commercial importance, and the forests of Russia, Scandinavia, and Germany are most extensive. Spruce firs, pines, and larches flourish in the north, and about 60° N. lat. the conifers are supplanted by deciduous trees having broader leaves. Among the deciduous trees of central Europe are the alder, beech, birch, chestnut, elm, lime, oak, sycamore, and plane, all of which are better adapted for the warmer conditions of life. A great deciduous forest formerly stretched to the Mediterranean, but much of it has been cleared, and now the trees do not form great forests but are scattered in clumps over the district. The most common trees in this southern region are the laurel, holly, myrtle, mulberry, and olive—trees with glossy leaves and retentive of moisture.

In the north-east of Europe is the tundra region, where an Arctic flora of mosses and lichens prevails.

### **Animals.**

The wild animals are fast decreasing as the forests are being cleared and the land is brought under cultivation. Among the wild animals there yet remain the reindeer, elk, and Polar bear in the north; the stag, the fallow deer, and the roebuck in the more southern regions; and the ibex is found on the central mountains. The animals peculiar to Europe are the chamois, musk rat, and fallow deer, and of the carnivorous animals the most noteworthy are the bear, wolf, fox, and lynx. The domestic animals used for food, clothing, or means of transport are found largely on the grass lands; this is especially true of cattle, sheep, and horses. The horse, mule, ox, camel, and reindeer are used as beasts of burden in different parts of the continent.

*calmly and give your all*  
*& attention - to secure this book*  
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## GENERAL FEATURES

The European seas and rivers afford excellent fisheries; the most valuable are those of the North Sea from which cod, herring, and mackerel are obtained in immense quantities. The tunny and anchovy fisheries of the Mediterranean are of lesser importance. Salmon are caught in rivers of the north-west, particularly in Norway and Scotland, and sturgeon in the rivers of the south-east and the Caspian Sea.

## The Economic Resources of Europe.

The minerals of greatest economic importance are those used as fuel and those worked for metals. Coal is the most important of the minerals used as fuel, and the European coalfields are widely scattered in the north European plain and the neighbouring islands. The coalfields along the Mediterranean region have, so far, proved unimportant. Black coal is found in the rocks of the carboniferous system, especially in the British Isles, France, Belgium, and western Germany. Brown coal is softer than black coal and of less value as a fuel. It is mined in south Germany and Austria. Petroleum wells are common in south-east Russia along the shores of the Caspian Sea, especially at Baku, the chief oil-field. Iron is by far the most useful and most important metal of Europe, and is often found in the neighbourhood of coal-mines, which, of course, much increases its value. The iron industry was founded in the British Isles where large quantities of the ore exist, and Spain, Scandinavia, south Germany, and parts of France also yield large supplies. One of the oldest metals used by man is copper and this is now obtained from south Spain, Italy, Germany, Wales, and Cornwall. Tin in ancient times was obtained from the Cornish mines, and Dolcoath mine, one of the greatest tin mines in Europe, is still being worked. Lead comes from Spain, Derbyshire, Wales, south Scotland, and the Harz and Erzgebirge mountains in Germany. Mercury is obtained from Spanish ores, and sulphur from volcanic

districts, particularly Sicily and Stromboli. Rock salt is mined from rocks of the European plain, especially in Britain, central Germany, and Austria, and much salt is obtained by evaporation along the sea coast of France and other countries. Europe is not rich in the precious metals; the chief gold mines are in the Ural Mountains and in Hungary; silver is more widely distributed and is generally found in lead ores; and platinum is chiefly found in the Urals.

It has already been noted that the Mediterranean lands have a warmer and more genial climate than further north, and as a result they produce fruits, oil-bearing plants, and the vine, which also grows freely in France and southern Germany. The vine is grown on the southern slopes of the hills and is found as far as  $50^{\circ}$  N. lat. Wheat grows best in limestone districts, especially in countries between latitudes  $45^{\circ}$  and  $54^{\circ}$ . The southern part of England, northern France, Germany, Hungary, and south Russia are the best wheat-producing areas. Barley and rye grow farther north than wheat, while maize, which requires a higher temperature, is cultivated farther south. Among the vegetables, potatoes and beet are the two most important root-crops; the former thrive in Ireland, south Scandinavia, and north Germany, the latter in north France, Germany, and south Russia.

The extensive grass lands of Europe consist mainly of rich meadow lands in England, Denmark, and Holland which support cattle and dairy farms, and the wide, open, dry plains, especially the Russian steppes, devoted to sheep-rearing and other industries.

## **People, Distribution of Population. Race. Religion.**

The population of Europe may be estimated at 400,000,000 and is second among the continents to that of Asia, although, in proportion to its area, it is the most densely peopled. The population is most sparse in

Scandinavia, Russia, and the north of Scotland. The large aggregations of people occur in the neighbourhood of mining and manufacturing towns, or at seaports and in their vicinity. The great majority of the people belong to the Caucasian or white division of the human family. It was conjectured by Keane that the original home of the white race was in North Africa between the Sudan and the Mediterranean,



Lapp Encampment.

and the same authority estimates the white people of Europe to number 355,000,000. At least 90 per cent. of this total speak languages belonging to the Greco-Italic, the Teutonic, and the Slavonic stocks of the Aryan group. It is probable that the number of the Teutons and Slavs is about equal, although

*This is the  
of S. G. collection  
Lapp encampment  
last Sept. 1891*

the latter have been increasing very rapidly of late, while the people speaking the languages belonging to the Greco-Italic stock are the least numerous of the three. Celtic languages are spoken in Wales, the Scottish highlands, Ireland, and Brittany; and Lettic and Lithuanian in West Russia. The Magyars of Hungary, the Turks and Tatars of the Russian steppes, and the Finns and Lapps of the extreme north are non-Aryan and belong to the Mongolian race.

With the exception of the Turks, who are Mohammedans, the bulk of the European people are Christians. Western Europe still shows traces of the influence of the Roman Empire, while Eastern Europe belongs to the Greek Church. Speaking broadly it may be said that southern Europe belongs to the Roman Catholic Church, while the Teutonic people broke away from this Church in the sixteenth century and profess some form of Protestantism. The separation of the Eastern and Western Churches which began in 330 A.D., when Constantinople became the capital of the East, was completed in the ninth century. The Turks captured Constantinople in 1453, and Luther inaugurated the Reformation at Wittenberg in 1517. Jews are scattered all over Europe, but are most numerous in Poland, Russia, Austria, and Germany, where they speak Hebrew and the language of the country in which they live.

## **The British Isles.**

### **Position.**

The British Isles lie off the west coast of Europe. At the south-eastern end England approaches the continent, so that the coast of France is only 21 miles distant, and on a clear day the cliffs on either side can be clearly seen from the opposite shore. This

narrow strip of intervening sea, which can now be crossed by steamboats in an hour, has served as a protection against invasion by foreign armies. Reference to a globe will show that the British Isles have a most advantageous situation in the middle of the great land area. It may further be noted that the position of the British Isles between Europe and America has been a great factor in developing the enormous commerce of our land. It has been well remarked that Britain has two great geographical qualities—insularity and universality. Before Columbus the insularity was more apparent, but after Columbus the opening of the ocean highway gave prominence to the latter quality and enabled Britain to become a great world power.

### Extent.

The British Isles, stretching for a distance of 700 miles, comprise the kingdoms of England and Scotland, the principality of Wales, the dependencies of the Isle of Man and the Channel Islands, and the Irish Free State. Besides the two main islands of Great Britain and Ireland, there are several thousand small islands, most of which are not inhabited. The total area of the British Isles is over 121,000 square miles, of which Great Britain forms nearly three-fourths or 88,000 square miles.

In considering the present extent of the British Isles, it is worth noting that at some far distant time Ireland and Britain formed one continuous piece of land and were joined to the mainland of Europe. The North Channel is less than 14 miles across at its narrowest part and widens southward in the Irish Sea to about 60 miles in width.

The meridian of  $4^{\circ}$  W. runs nearly through the middle of the British Isles. Great Britain at its broadest part between Cardigan Bay and Yarmouth is about 250 miles wide, and at its narrowest part between the Forth and Clyde it is about 25 miles wide.

### Surface and General Features.

Geographers are generally agreed that the existing British mountains are the worn stumps of old rock-masses. The highest hills of granite, schist, volcanic rocks, or other hard material have been carved into their present forms by the action of water, wind, frost, or ice that has worn away the surface of the land. Thus it comes about that while the hills are the result of the unequal lowering of the surface, their forms vary according to the nature of the rocks of which they are formed. Thus in the Highlands of Scotland the hills are largely formed of ancient crystalline rocks and so the scenery of this district has its own characteristics. The Yorkshire hills and the mountains of Antrim are composed of rocks of a different kind, and so the scenery of those districts is quite distinct. The distribution of the uplands and lowlands of Britain suggest two or three important points for consideration. Scotland and Wales are mountainous and much of the surface of those countries is bare or unfertile, while the lowlands are in the south-eastern portion of the island. This is the driest, broadest, and most cultivable part, and within the shortest distance of the continent. Hence the early invaders from Europe settled in the rich lowlands of the south and east of England and drove the older inhabitants to the hilly country of the west and north. Not only do we trace the grouping of the races in Britain to this geographical feature, but the occupations of the people to a large extent have also been affected. The lowlands are the great farming districts, and the hills, where not fit for the rearing of sheep and cattle, are left to the wild animals and serve as grouse moors and deer forests.

Scotland may be divided into the Highlands, the Lowlands, and the Southern Uplands. The *Highlands* comprise nearly half the country lying to the north of a line drawn from the Firth of Clyde to Stonehaven,

and are divided into two portions by the hollow of the Great Glen. Some of the heights are over 4000 feet, and Ben Nevis, the highest summit in the British Isles, is 4406 feet. None of the Scottish peaks quite reach the snow-line, but in most of their higher recesses, facing north, snow wreaths lie unmelted through the summer. The *Lowlands* have a line of heights from Girvan to Dunbar for its southern limit, and, though called a plain, they have some ranges of



Avtar  
Man  
Roll  
Geog  
stud  
S.P.C.

Schiehallion.

(*A mountain of quartzite.*)

hills—the Ochils, Sidlaws, Campsie Fells, and the Pentland Hills. There are many isolated hills and crags on which fortresses and castles have been built, such as Edinburgh and Stirling.

The *Southern Uplands* form a broad belt of high pastoral land, consisting of grassy hills broken by narrow valleys. The highest point reaches 2764 feet.

In **England and Wales** there are two distinct types of uplands, and if a line be drawn from the Tees

to the Severn, it will be found that hills of one type are on the west of the line and hills of another type to the east of it. In the *eastern type*, the hills consist of limestone, sandstone, or other stone in layers, varying in form and character according to their constituent materials. They have generally steep fronts to the north or north-west and gentle slopes in the opposite direction. The chief range begins on the south coast, east of Exeter, and, after leaving Devonshire as the Blackdown Hills, runs as a ridge of heights to Bath. It reappears on the other side of the Avon as the Cotswold Hills and passes through Oxfordshire, Northamptonshire, and Rutland to Lincoln and the Humber. North of this estuary it reappears and forms the range of heights on the east side of the Vale of York, rising to 1500 feet. This long range of upland consists chiefly of limestone and other rocks belonging to the Oolitic group, and is often referred to as the Oolitic escarpment. There are minor ridges in south-eastern England, and these start from the coast of Dorset and strike north-eastwards to Salisbury. Then this upland turns north-east and forms the Chiltern Hills from Berkshire to Cambridge. It again appears in the Wolds of Lincolnshire, and crossing the Humber becomes the Wolds of Yorkshire, which terminate in Flamborough Head. This chalk escarpment, as it is called, sends out from Salisbury Plain a broad band through Hampshire which divides into the North Downs and South Downs, the former ending in the cliffs of Kent and the latter in Beachy Head.

The *western type* of hill has greater variety of form, and is much more ancient than the eastern type. In the south, the granite rocks of Cornwall and Devon rise into Dartmoor in south Devon and Exmoor in west Somerset. Further east are the Mendip Hills, a mass of mountain limestone, and northwards are the graceful Malvern Hills. Nearly the whole of Wales is mountainous. In south Wales the hills rise in the county of Brecon to 2862 feet.

In north Wales the hills are more rugged and much higher than in the south, and there are masses of ancient volcanic rocks, the chief of which are Snowdon (3571 feet) and Cader Idris (2929 feet). The Pennine Chain is a mass of high land extending from near Derby to Scotland, consisting of limestones, grits, and sandstones. In early times this chain formed a great barrier, well-nigh impassable, between the people living on either side of it. Crossfell (2930 feet) is the highest peak. What may be termed the Cumbrian group is a picturesque group of hills in Cumberland and Westmorland. Scafell Pike (3166 feet) is the highest peak, but Helvellyn and Skiddaw are nearly as high.

In Ireland we may consider the physical features best if we think of the island as composed of a central plain surrounded by broken belts of high land. The whole of the interior is not, however, one level plain, for much of it is low undulating limestone with occasional ranges of hills, such as the Bernagh Mountains in the north and the Silvermine Mountains in the east. The widest space of low ground is in the basin of the Shannon, much of which is covered with morasses, forming the great Bog of Allen. The mountains fringing the coast are most continuous in the south, extending from Dublin through the southern counties to Kerry, where Macgillicuddy's Reeks have the highest summit in Ireland—Carantuo Hill (3414 feet). The western ranges are not so high nor so continuous, but in Donegal there are summits of over 1900 feet. The eastern side of Ireland has the volcanic rocks of Antrim rising to 2000 feet, the Mourne Mountains nearly 3000 feet high, and the Wicklow Mountains which reach over 3000 feet above the sea at Lugnaquilla.

### **Watersheds and Rivers.**

In Great Britain the main watershed runs north and south, keeping much nearer the west coast than

the east. In *Scotland* there is no large river on the west side of the Highlands, and in the Lowlands the watershed crosses from Ben Lomond over the Pentland Hills, and strikes into the Southern Uplands, which it divides into two parts. Of the *eastern* rivers the Tweed, Forth, Tay, Dee, Don, and Spey are the



The Mourne Mountains.

(*Slieve Bingian and Colligan Bridge.*)

most important. The Tay has the largest basin and pours a greater volume of water into the sea than any other British river. The Spey is the most impetuous Scottish river. The *western* rivers are few in number, the Clyde being the longest; only small streams belong to the Highlands. In the south of Scotland the Nith, Annan, and Esk enter the Solway Firth.

In *England and Wales* there are three groups of rivers—those flowing into (1) the North Sea, (2) the English Channel, and (3) the St George's Channel and the Irish Sea. The *eastward* flowing rivers are the longest,

with the exception of the Severn, and of these the most important are the Tyne, Yorkshire Ouse, Trent, and Thames, the latter being navigable for 124 miles to Lechlade. The *western* rivers are for the most part short in length and small in volume. Of them the chief are the Eden, Ribble, Mersey, Dee, and Severn, the last being the longest river in Great Britain. The *southern* rivers are all short and have small drainage areas. The Tamar, Exe, and Salisbury Avon are the most important, while those to the east of the Isle of Wight are mere streams.

In *Ireland* the watershed lies much nearer the eastern than the western coast and the greater part of the drainage goes into the Atlantic. Of the *western* rivers, the Shannon, the longest river in the British Isles, is navigable for 214 miles. The *eastern* and *southern* rivers include the Boyne, Liffey, Slaney, Barrow, Blackwater, and Lee. On the *northern* coast there are the Foyle and the Bann, the latter flowing through Lough Neagh.

### Lakes.

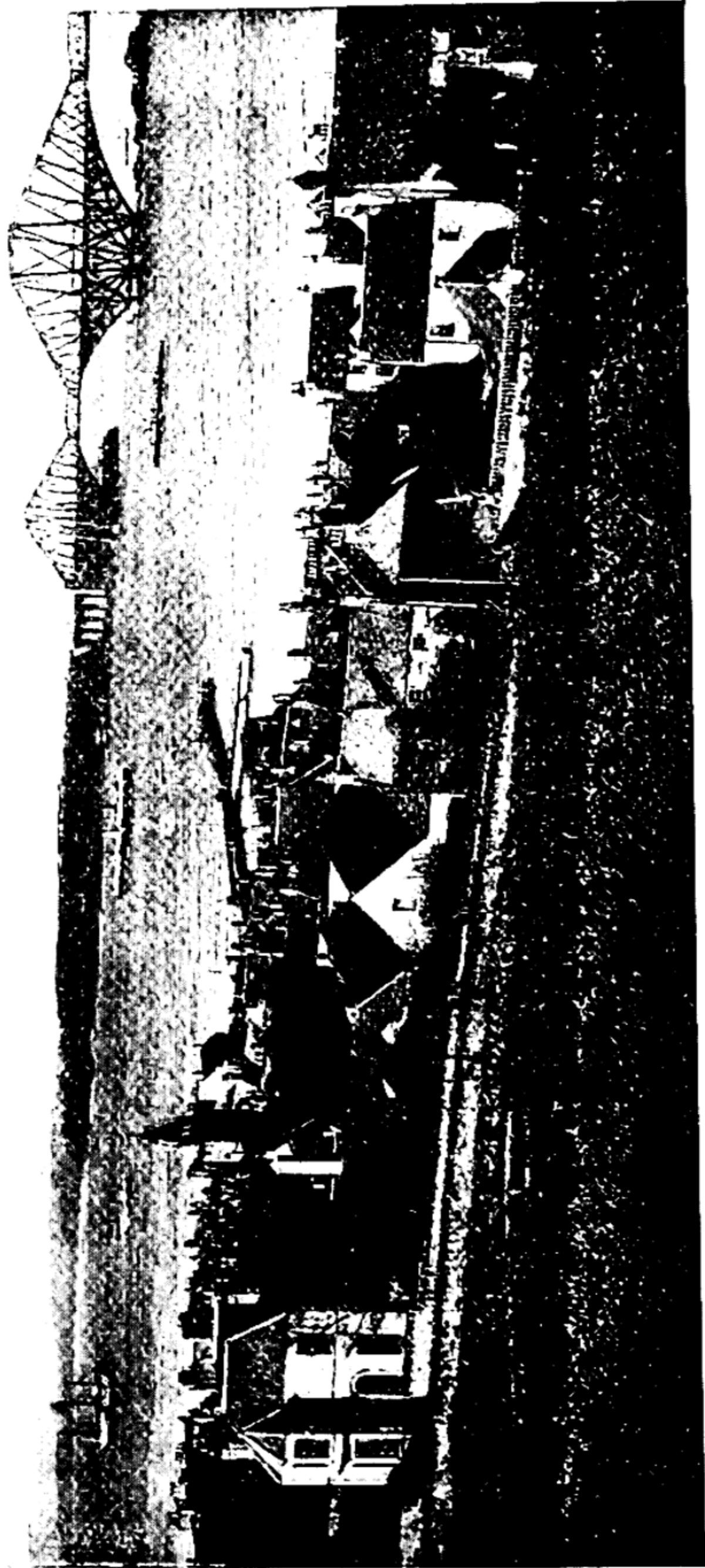
The lakes of *Ireland* are larger than those of Great Britain and are, as a rule, expansions of the rivers. Thus the course of the Shannon is through the lakes—Allen, Ree, and Derg, and the Erne River runs through Lough Erne and Upper Lough Erne. In Connaught, Loughs Corrib, Mask, and Conn have been formed by the solution of the limestone in the river water. Lough Neagh, the largest of all British lakes, is probably due to the subsidence of the neighbouring volcanic rocks. The famous lakes of Killarney lie among the finest scenery and loftiest mountains in Ireland. The lakes of *Great Britain* are almost all of glacial origin, the most interesting of them being in the Highland glens of Scotland and in the dales of Cumberland and Westmorland. They are usually long and deep, and occur both in longitudinal and transverse valleys. Loch Lomond in the Highlands is the

largest and one of the most picturesque, while Lochs Maree, Katrine, Tay, Avon, and Coruisk in Skye are all noted for their scenery. The greater part of England is without lakes, but the scenery of the Lake District, which includes Windermere, Ullswater, Derwent water, Coniston Water and many smaller lakes, is the most picturesque in England. The Fen district formerly had extensive sheets of shallow water, most of which have been drained. Whittlesea Mere, near Peterborough, was one of the Fen lakes. In north Wales there are many small tarns or llyns. Bala Lake, the source of the Dee, is the largest in Wales.

### **The Coasts of the British Isles.**

The British Isles are really a part of Europe and were not always separated from it by the sea. The high tracts of Scandinavia sink under the sea at the south of Norway, but they rise out of the sea again to form the Highlands of Scotland and the mountains of the west of Ireland. The European plain ending in Denmark, Holland, Belgium, and northern France sinks under the waters of the North Sea to reappear as the lowlands of the east and south-east of England. The North Sea is so shallow that if it were raised only 600 feet it would become dry land and form part of the European plain. The separation of the British Isles from Europe was brought about by a sinking of the ground, which thus allowed the sea to flow over the previously dry tracts of land. At the present time many of the coast inlets are valleys which the sea has occupied; good examples may be seen in the Firths of Tay, Forth, and Clyde, and the Bristol Channel. As some of these estuaries pass far into the land where it is fairly low, it will be noted that the country is narrowest between the Forth and Clyde, the Humber and Mersey, the Thames and the Severn.

In the Lake District, in Wales, and north-east Yorkshire the peculiarly shaped coast-line is due to the hard mountain masses. In west Scotland and



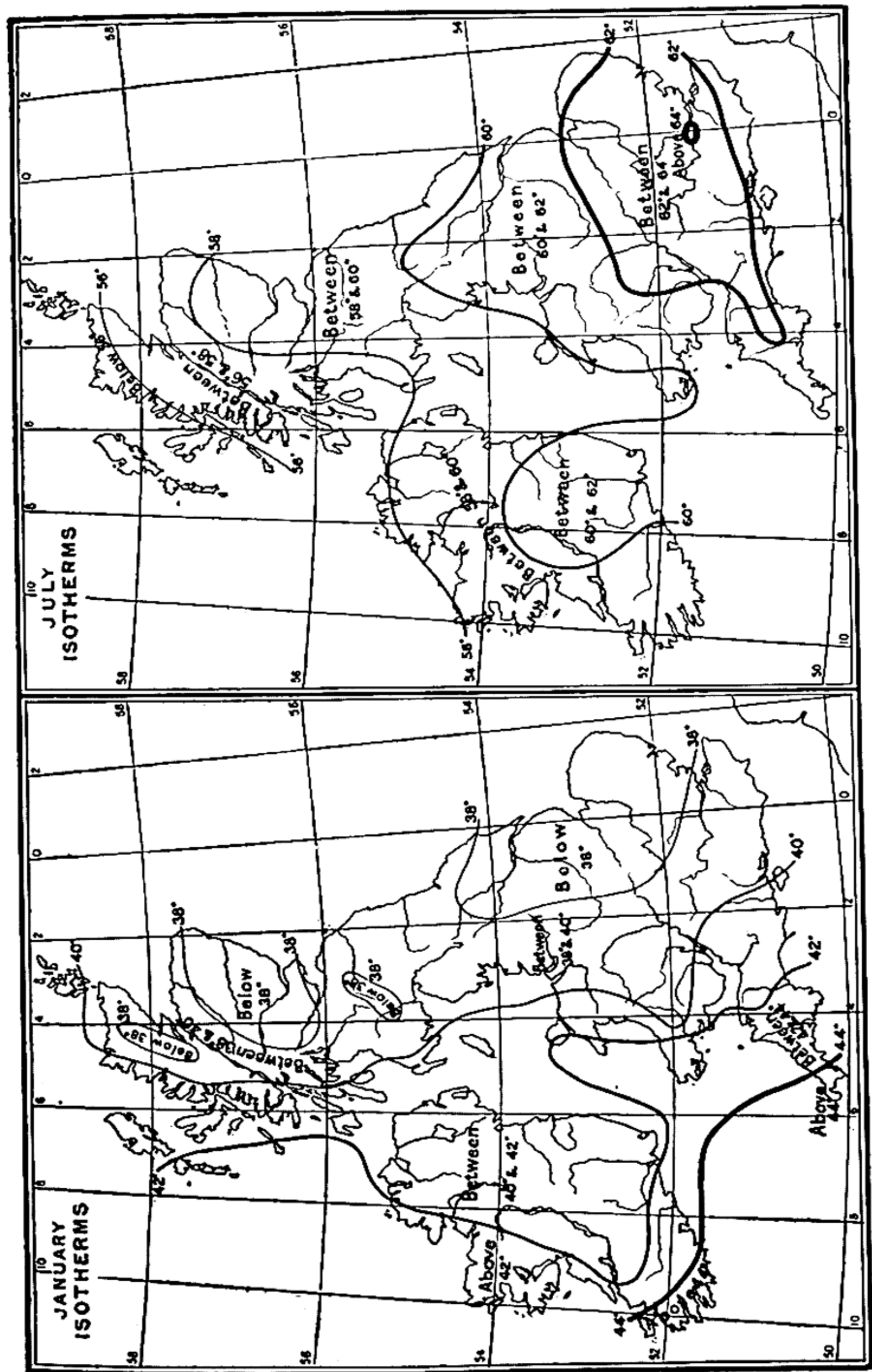
The Firth of Forth from the south

west Ireland every headland is the end of a mountain chain, and the valleys between the chains are now the lochs. Sometimes islands, generally rocky and forming beautiful coast scenery, continue the chain further into the sea. As a striking contrast, we may notice the appearance of the coast when a plain reaches the sea, as in Lancashire, the Fen country, or the eastern side of the Irish plain.

Only two inlets of the east coast—the Cromarty Firth and the Firth of Forth—form harbours that a ship can enter in a storm without a pilot. The great estuaries of the Tay, the Humber, and the Thames are very shallow, full of shifting sand-banks, and can only be entered by experienced pilots. The south coast of England and the coast of Wales have many fine natural harbours, such as Southampton Water, Plymouth Sound, Falmouth Harbour, and Milford Haven. Wide shallows and bars obstruct the port of the north-west of England and the east of Ireland; but there are many long, deep, winding inlets on the west of Scotland and the west and south of Ireland. Ships are warned and guided at night by lighthouses on promontories or sea-girt rocks around our coast, and by lightships anchored off dangerous sand-banks and sunken rocks. All the channels and harbour entrances are marked by floating buoys or fixed beacons.

### **Climate and Rainfall.**

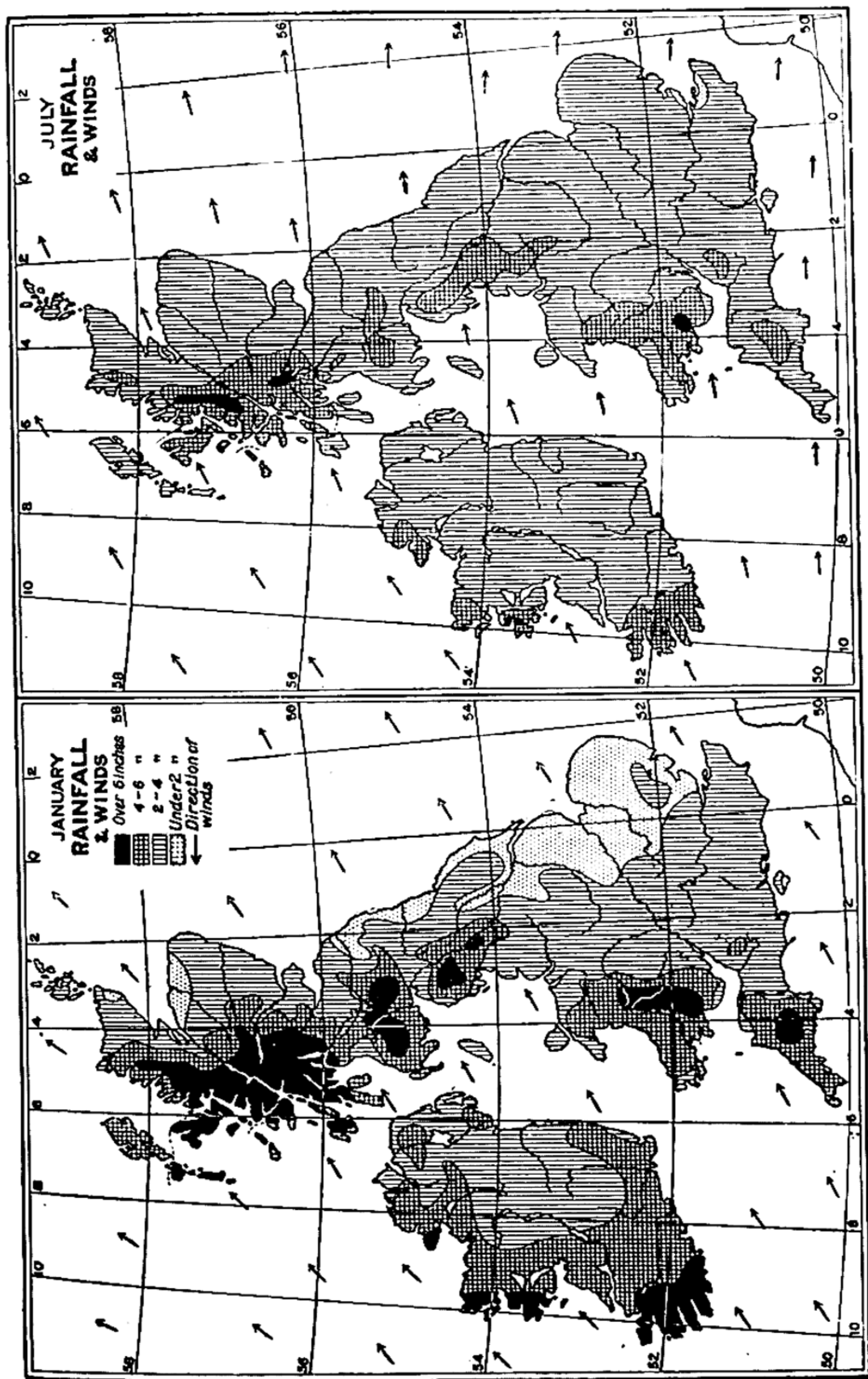
The British Isles have, by reason of their position, a temperate insular climate, but the average annual temperature is much higher than could be expected from its latitude. Places in the same latitude in the heart of Europe have on the contrary a continental climate, while the British climate is tempered by the proximity of the ocean, and the prevalence of the south-westerly winds towards our shores causes the mildness of our winter. When the east wind blows in spring, the temperature falls, because the air comes from a cold and snow-covered continent. The western



Isotherms of British Isles.

parts of our islands, being nearer the ocean, are thus milder than the eastern parts, which approach more nearly to the continental type of climate. The summers are warmest in south-eastern England, where the July temperature averages  $64^{\circ}$  F., and coolest in the extreme north of Great Britain, where it is  $10^{\circ}$  or  $11^{\circ}$  lower. The winters are mildest in the south-west of Ireland and England, where the January temperature averages about  $45^{\circ}$ , and coldest along the east coast of Scotland and England, where the mean January temperature is not more than  $38^{\circ}$ . The mean annual temperature of our islands is about  $47^{\circ}$  F. and the number of hours of bright sunshine about 1484. Most of our weather comes from the Atlantic and the conditions are either cyclonic or anti-cyclonic. Cyclonic conditions are associated with a greater or less amount of atmospheric disturbance, while anti-cyclonic conditions are associated with calms. The prevalent Atlantic winds largely affect the rainfall of our islands. The air, heavily laden with moisture in its passage over the ocean, meets with elevated land masses directly it reaches our shores—the hills of south-west Ireland, the moorlands of Cornwall and Devon, the Welsh mountains, the hills of Cumberland and Westmorland, and the mountains of western Scotland—and parts with the moisture as rain. A reference to the rainfall map of the British Isles will show that the heaviest fall is in the west and that it decreases until the least fall is recorded on our eastern shores. The number of days with rain in the British Isles is about 200 in each year and the average rainfall is about 34 inches. But there are spots in the Welsh mountains and in the Cumbrian group where an annual rainfall of 180 inches or more is recorded. On the other hand, the lowest rainfall of 20 inches or even less is experienced in the eastern parts of Essex and Suffolk.

Besides the causes already mentioned as influencing our climate, there are other and more local factors which often greatly affect the climate of a place, such,



Rainfall and winds of British Isles.

for example, as configuration, position, and soil. Thus it will be found that the shelter of a range of hills, a southern aspect, or a sandy soil will produce conditions which may differ widely from those of a place—perhaps at no great distance—situated on a wind-swept northern slope with a cold clay soil. The character of the climate of the British Isles influences both the cultivation of the soil and the products of the land, and thus exercises a profound effect upon the people of our land.

### Plants.

It has already been indicated that the British Isles have not existed as such, and separated from the continent, for any great length of geological time. Great Britain and Ireland were originally part of the continent, and are examples of what geologists call continental islands. But we also have certain proofs that at some remote period they were almost entirely submerged. The fauna and flora being thus destroyed, the land would have to be re-stocked with animals and plants from the continent, when union again took place, the influx of course coming from the east and south. As, however, it was not long before separation occurred, not all the continental species could establish themselves. We should thus expect to find that the parts in the neighbourhood of the continent were richer in species, and those farthest off poorest, and this proves to be the case both in plants and animals. While Britain has fewer species than France or Belgium, Ireland has still less than Britain. The native vegetation has been to a large extent extirpated from the cultivated districts, but heather still covers the moors and hillsides, gorse and broom clothe the unenclosed lowlands, and in spring and summer wild flowers are rich and varied in the thickets.

At the dawn of history a large part of our country was covered with dense forests and impenetrable morasses, but of these primeval forests few traces now remain,

and of the morasses the bogs of Scotland and Ireland serve as examples. The most common trees in England and Ireland are the oak and beech, while in Scotland the ash, beech and Scotch fir are the most frequent. Most of the other trees and all cultivated plants have been introduced, but these will be noticed later on.

### Animals.

The native animals that lived in the earliest days of our history have been nearly all extirpated. The bear, wolf, wild boar, and beaver have long since disappeared, and now there are no larger beasts except the red deer, preserved in the Highlands of Scotland, Exmoor, and elsewhere for purposes of sport. The fallow deer is common in many of our parks, while the roebuck, fox-badger, otter, wild-cat, rabbit, and squirrel are abundant in certain parts of the British Isles. There are few species of snakes in Great Britain and none in Ireland, while the viper is the only poisonous snake. It is well to remember that most of the animals of economic value, and some of those kept for sport, have been introduced from abroad. Thus the dog, hog, horse, and goat were introduced by the successive bands of invaders, who brought these animals with them from some earlier eastern home.

### Fisheries.

The fish caught round the coasts are those common to the seas of north-western Europe, but the fisheries of the east are four times more productive than those of the west, mainly owing to the large shoals of the North Sea, whose banks and bottoms afford abundant food. Grimsby and Hull in England, and Aberdeen in Scotland, are the chief landing ports. The Atlantic fisheries are at a disadvantage owing to their remoteness from great centres of population. Cod, haddock, whiting, and herrings are most prolific in the North Sea, while the south coasts are visited by mackerel

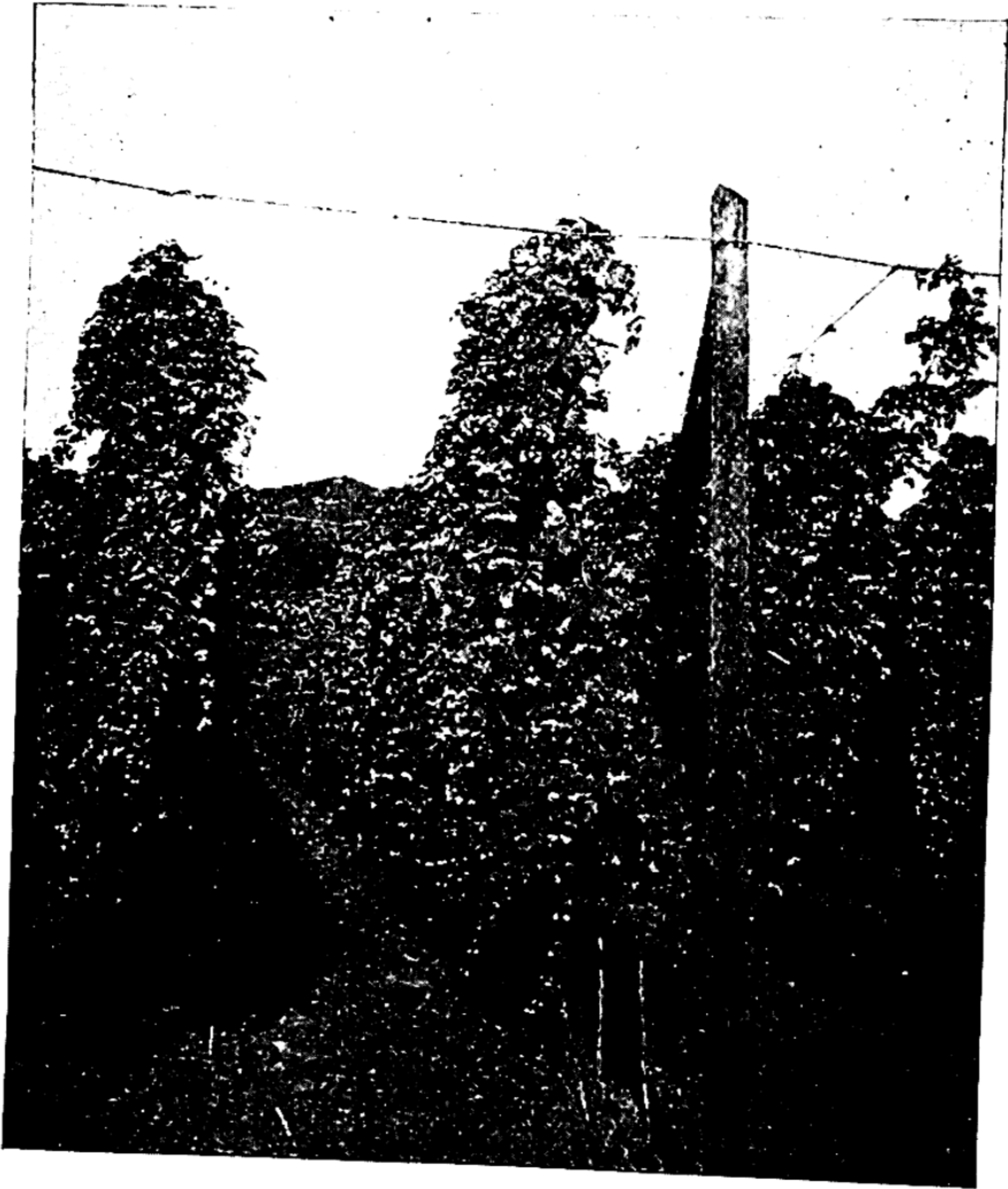
and pilchards in the summer and autumn. The oysters, most important of the shell-fish, and famous in Roman days, are cultivated in the Essex estuaries and near Whitstable in Kent. Of all the river fish, the salmon is the most renowned in the fresh water of Scotland, Ireland, and in some English rivers.

## Agriculture.

### (a) Crops.

The area of the British Isles is over 121,000 square miles, or 77 million acres. About one-third of this acreage is occupied by the mountains of Scotland and Wales and the bogs of Ireland, which cannot be cultivated on account of the poor soil and inclement climate. It has been already explained that the most noticeable feature in our climate is its moist, equable character; and this has resulted in the widespread verdure, so that more than one-half of Great Britain and three-quarters of Ireland are under crops and grass. The arable land of the British Isles extends over 20,000,000 acres, and the crops in order of acreage are oats, barley, wheat, beans, peas, and rye. The climate of the Scottish Highlands is less favourable for agriculture than that of southern England because it has much less sunshine, more rain, and a poorer soil; but the narrow strip of low ground along the east of Scotland from Caithness to Berwick is highly cultivated; oats and barley form the chief crops, and oats also grow in Ireland, where the moist climate is not so suitable for cultivating other grain crops. Wheat requires rich soil, abundant summer sunshine, and little rain, and these conditions occur in eastern Scotland and the greater part of eastern England, but particularly in Lincolnshire, Yorkshire, Norfolk, Suffolk, and Essex, which counties produce a large portion of British grown wheat. Owing largely to the cheapening of foreign wheat, this cereal has declined from an average of over 4 million acres in 1867 to 1·6 million at the present time. Among root crops,

potatoes are largely grown on the drained soils of Ireland, and turnips are a characteristic crop of the eastern counties of England. Hops are grown in Kent,



Hop Garden in the Teme Valley, Worcester.

Sussex, and Worcestershire, and flax covers a considerable area in Ulster, whose moist cold climate is suited for its cultivation. Market gardening is of increasing

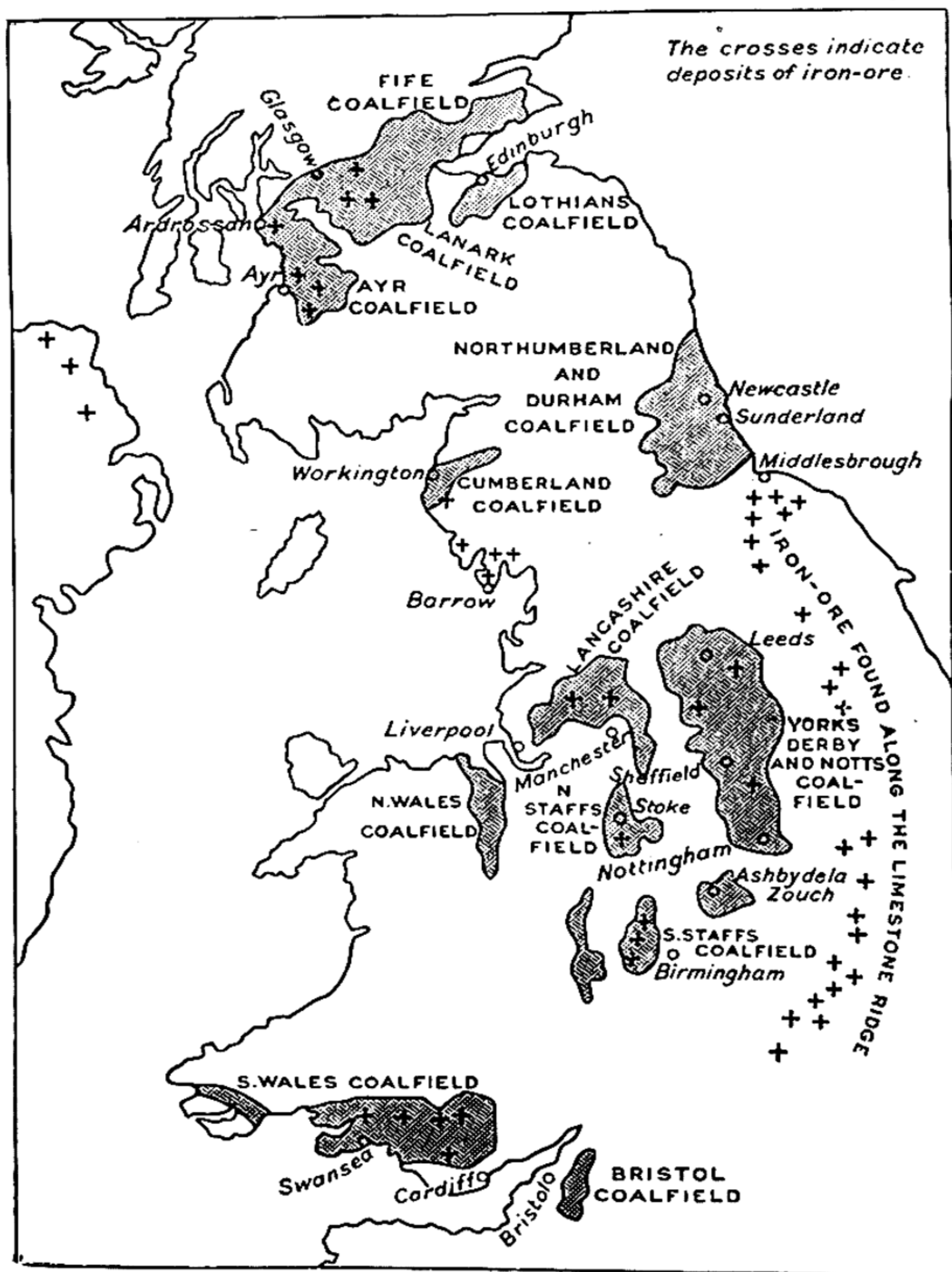
importance in the neighbourhood of large towns, and on account of their mild climate the Scilly Isles and the Channel Isles have acquired some importance for the production of early vegetables and spring flowers. Apple and pear orchards are widely spread over Devon, Hereford, Gloucester, and Somerset, while small fruit, such as strawberries and gooseberries, is receiving increasing attention in all parts of the country. Attempts have been made in recent years to introduce tobacco, beetroot, and other industrial plants, but the success attending these efforts has not been great. We import a large proportion of the vegetable food-products and we do not grow any in sufficient quantity to be an important article of export.

#### (b) Live Stock.

The breeds of English cattle are unrivalled for size and weight, and the English horses for strength, endurance and beauty. Cattle are numerous in Ireland, and in the low-lying regions of Wales and the west of England. East Scotland rears more cattle than west Scotland, but eastern England is more famous for sheep than the west of England. Sheep predominate on the chalk and limestone hills of the east and south of England, and in Scotland on the southern uplands, especially the Cheviots. Horse-rearing is of importance in the north-east of Yorkshire, in Suffolk, and some of the midland counties. Agricultural statistics show that there are ten times as many pigs in Ireland as in Scotland; indeed, Ireland has nearly half as many pigs as the whole of Great Britain. This fact may be associated with the relatively late prevalence in Ireland of wild forest conditions, for we know that in Norman times the pig was the most numerous of British domestic animals.

#### Minerals.

Among the physical and natural advantages of the British Isles we must give an important place to



The Coal-fields of Britain.

the abundance of coal and iron. This advantage is further increased by the fact that enormous supplies of both coal and iron are found close to seaports, and that the coal for the smelting of iron is sometimes found on the spot and generally at no great distance from the iron-ore. The quantity of coal raised annually in the British Isles has steadily increased from 64 million tons in 1855 to 230 million tons at the present time. The value of this immense output is estimated at £314,000,000 and forms the basis of England's manufacturing prosperity. At present, coal is the only commodity which we do not need to import. We export about 30 million tons of coal yearly. Ireland raises very little coal and depends on Great Britain for her supply. The 20 coal-fields of Great Britain, employing about 900,000 people, may be thus divided:

1. *The Yorkshire Coal-field* may be called the woollen coal-field, for Leeds, Bradford, Huddersfield, Nottingham, and Derby cluster round it. This coal-field, on the eastern slope of the Pennines, extends into Derbyshire and Nottinghamshire. Much of the coal not used in Sheffield or in the other manufacturing towns is sent to London.

2. *The Northumberland and Durham Coal-fields* supply much coal for the ironworks and factories of Newcastle, Sunderland, Hartlepool, and Middlesbrough, and ship the remainder at the ports of the Tyne, Wear, and Tees to all parts of the world.

3. *The South Wales Coal-fields* in Glamorgan, Monmouth, and the neighbouring counties are specially valuable for their supplies of anthracite. The towns in the Rhondda Valley are increasing on account of the coal supplies, and the ironworks of Merthyr-Tydvil, Ebbw Vale, the copper-smelting of Swansea, and the manufactures of Cardiff depend for their working on the supply from these coal-fields. The chief coaling ports are Newport, Cardiff, Barry, and Swansea.

4. *The Lancashire Coal-field*, or the cotton coal-field, yields the coal for the cotton-trading towns

of Manchester, Salford, Oldham, Bolton, Blackburn, and other centres of the most densely peopled and industrious part of England.

5. *The Staffordshire Coal-fields* are small and scattered, supplying the factories of the Black Country and the Potteries. As these are the nearest coal-fields to London, large supplies are sent to the metropolis by rail and canal.

6. *The Scottish Coal-fields* are scattered over the Lowlands, and supply the manufactures of Glasgow, the ports on the Clyde, the north of Ireland, and the seaports in the east of Scotland.

Besides these six groups of coal-fields, there are others of less importance in Cumberland, North Wales, Coalbrookdale in Shropshire, the Forest of Dean in Gloucester, and near Bristol. In quite recent times, coal-mining has begun in Kent, and although the yield is not at present large, there are signs that the eastern part of this county is likely to be radically changed by the presence of coal.

*Iron.* Iron ore is largely worked in some of the coal-fields, particularly in Staffordshire and Yorkshire, and to a less extent in Wales. Thick beds are worked in the Cleveland district south of the Tees, and Middlesbrough owes its prosperity entirely to this iron ore. Barrow has risen to importance because of the valuable iron ore of Cumberland and North Lancashire. About 15 million tons of iron ore are yearly raised in Great Britain, and about six million tons are imported from abroad, mainly from Spain. South Wales and north Lanarkshire are almost wholly dependent on foreign ores for their blast furnaces, but the excellent foundry iron from Scotch ores supplies most of the material used at Falkirk and elsewhere for cast-iron goods.

*Tin* ore is mined only in Cornwall and Devon; *copper* is found in the same counties, particularly Cornwall, but the quantity raised is now very small. The large supply of imported copper is smelted at Swansea and Widnes. *Lead* is extracted at Leadhills in Lanark-

shire, in Cumberland, Wales, and the Isle of Man. *Zinc*, frequently mined with lead, is mainly obtained in Cumberland, Northumberland, and North Wales. *Slate* is quarried in Wales, chiefly at Llanberis and Festiniog, in Westmorland, and in parts of Scotland. *Rock salt* occurs in Cheshire and Worcestershire and is manufactured from the brine in the mines about Northwich and Droitwich. *Clay* for brick-making is specially abundant in the south-eastern counties and more particularly around London. *China clay*, from the decayed granite of Cornwall and Devon, is sent to the Potteries in great quantities. *Fire clay* is obtained in the same districts and in the coal-fields. *Granite* from the ancient rocks of Scotland, Ireland, and the west of England is used for building. The granites of Cornwall yield the material for docks, breakwaters, bridges, and lighthouses; and those of Cornwall, Devon, Swanage, Aberdeen, Peterhead, and the Isle of Mull for kerbstones, paving, pillars, and national buildings in London and other large towns. The Channel Islands also supply granite for paving and kerbing, while the granites of Ireland are used for ornamental work. Various kinds of *limestone*, especially those of Bath and Portland, are largely quarried and used for building purposes. *Fuller's earth* from Reigate in Surrey, and *soapstone*, or "French chalk," are both used in great centres of industry; while many kinds of *stone*—cutler's greenstones, millstones, Sheffield bluestone, and the Yorkshire stone for cutlers—are obtained in the north and north-east of England. *Jet* is found near Whitby, but is now not much worked. Ireland is generally poor in minerals. The Wicklow Hills supply *lead*, *silver*, and *zinc*, while *granite* is found in Donegal, Galway, and elsewhere. Ireland has, however, abundant supplies of *peat*.

### People, Race, and Languages.

The people of the British Isles consist of several distinct races, and, besides English, at least three

languages are spoken—the Erse in Ireland, Gaelic in Scotland, and Welsh in Wales. The variety of topographical names in all parts is further evidence of the fact that Britain has been successively occupied by several races. In the earliest times we have primitive man in the Old Stone Age succeeded by Picts and those associated with the monuments of the New Stone Age. Next came the Celts, who spoke the Gaelic or Irish language, and they are now represented by the Highlanders of Scotland and the people of the west and south of Ireland. These early Celts were pushed back by another Celtic tribe, the Cymry or Britons, who settled in England, Wales, and south Scotland; their language is spoken by the present inhabitants of Wales. Somewhat later arrived the Belgae, who met Caesar and his legions. The Romans, although they were masters of this country for nearly four centuries, left little impress on the population: but the influx of Frisians, Saxons, Jutes, Angles, Danes, and Norsemen in the period between the fourth and sixth centuries led to great changes, for the older inhabitants were driven into the hilly tracts of Devon, Cornwall, Wales, and Scotland. The incursion of Scandinavians, chiefly Danes and Norwegians of kindred speech, in the eighth to the tenth centuries, and the invasion and conquest of England by the Normans wrought further changes in the character of the population. Since the eleventh century there have been sporadic arrivals, mainly Jews, Flemings, and Huguenots, from the mainland. These people have to some extent coalesced with the British and added to the strength and ability of the race. The population of Great Britain in 1921 was 42,767,530, a total which shows an increase of 4·7 per cent. upon the number returned in 1911. It is to be noted that while the populations of England, Wales, and Scotland have shown continuous increases during the past 90 years, that of Ireland, which had risen to over eight millions in 1841, has since that date

shown a continuous decrease. In the early part of the nineteenth century, Ireland contained nearly a third of the entire population. England contains over 75 per cent. of the population of the British Isles; Scotland rather more and Ireland rather less than 10 per cent.; while Wales contains the remaining  $4\frac{1}{2}$  per cent. The islands in the British Seas had a population in 1921 of 149,852, of which the Isle of Man had 60,238 and the Channel Isles 89,614. The population of the county of London was 4,483,249, showing for the second time since 1801 an actual decrease. In England and Wales 78 per cent. of the people were living in towns, while 22 per cent. were under rural conditions.

During 1920, 436,784 people left our shores, emigrating to the United States, British North America, Australasia, British South Africa, and other places; while 261,705 immigrants landed in the United Kingdom.

## Religion.

In *England and Wales* the Church of England is the state religion, and besides the Archbishops of Canterbury and York there are 35 bishops and numerous suffragan bishops. There are no civil disabilities on account of religion; and the chief Nonconformist sects are Wesleyan Methodists, Congregationalists, and Baptists. The Roman Catholic Church has probably two million adherents in Great Britain, who are most numerous in Lancashire, London, and large centres of population. There are about 250,000 Jews in Great Britain, of whom a large number are in London, Manchester, Leeds, and other towns.

In *Scotland* the state Church of Scotland is Presbyterian, but the United Free Church of Scotland has a large body of adherents. Both the Episcopal and the Roman Catholic Churches are also well represented.

In *Ireland* the Roman Catholic Church has the

most adherents, especially in Leinster, Munster, and Connaught. The various Protestant denominations are most numerous in Ulster. The Episcopal Church of Ireland ceased to be established by law in 1869, and has now about 600,000 followers.

## Education.

With regard to education, *England* has the ancient universities of Oxford and Cambridge, besides those of Durham, London, Manchester, Birmingham, Liverpool, Leeds, Sheffield, and Bristol. The University of Wales, founded in 1903, has three colleges, Aberystwyth, Bangor, and Cardiff. *Scotland* has the four ancient universities of St Andrews, Glasgow, Aberdeen, and Edinburgh. In Ireland there is the University of Dublin founded 1591. In 1909 the National University of Ireland was founded in Dublin, and the Queen's University of Belfast in Belfast.

Secondary education in *England and Wales* has made great progress in recent years, and besides 1073 recognised secondary schools there are many technical institutions and schools of art. In *Scotland* the burgh schools—such as grammar schools, high schools, etc.—are administered by the local education authorities, and in *Ireland* there is an Intermediate Education Board.

Elementary education in *England and Wales* is under the Board of Education, and by the Education Acts of 1902 and 1903 the school boards were abolished, their place being taken by councils of counties, and by local authorities in county boroughs, some non-county boroughs, and various urban district councils. Elementary education in *Scotland* is under the Scottish Education Department, and each district has its own specially elected education authority; and in *Ireland* it is under the Commissioners of National Education in Ireland.

## Industries and Manufactures.

Most of our great industries in which machinery plays a leading part have become centred in the Midlands or the Northern Counties, where iron and coal are found in great abundance. Places which, less than a century ago, were rural and sparsely populated are now busy with manufactures which give employment to thousands of people. There was a time when agricultural and pastoral pursuits were the chief occupations of the people, but now the manufactures of our busy towns are of far greater importance.

The change in the locality of our industries is very remarkable. Thus we find that Norfolk, Essex, and Sussex were formerly famous for the manufacture of broadcloth, and these counties were then rich and their merchants built fine churches and large houses. Now, those counties are no longer famous for such industries, and the weaving trade has gone northwards. The same remark applies to the iron-works that formerly existed in the Weald of south-eastern England, for in the sixteenth and seventeenth centuries that district was the "Black Country" of England, as there was an enormous supply of timber for smelting purposes. Smelting has long been extinct in Kent, Surrey, and Sussex, owing to the destruction of the forests, and the iron industry has gone northwards, where coal is easily obtained for the furnaces. The industries of the British Isles have arisen in most cases from the natural resources of the country: Ireland, the north of Scotland, and the south, east, and south-west of England are chiefly engaged in pastoral and agricultural pursuits, while the busy manufacturing centres are generally on or near the coal-fields.

### (a) The Iron Industry.

Iron-smelting and the manufacture of iron and steel goods constitute one of our greatest industries. This will be understood when it is remembered that

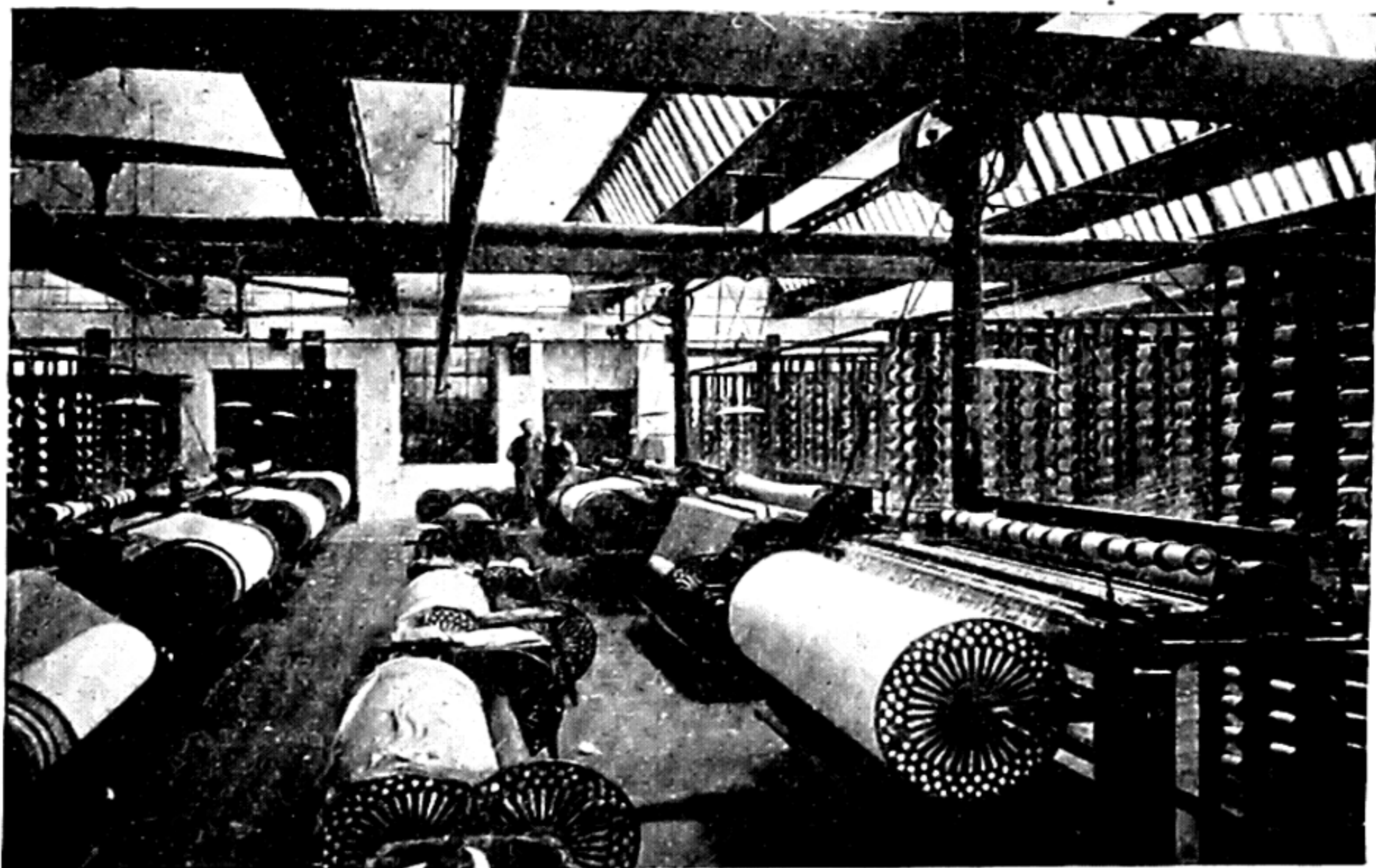
iron and steel now enter so largely into the construction of our modern buildings, and are used for the making of bridges, for machinery of all kinds, for our ships, and for countless other purposes. *Machinery* is made in all manufacturing, agricultural, and railway centres, but Manchester, Birmingham, Leeds, Coventry, and Glasgow have some of the largest establishments. Birmingham is the great centre of *gun-making*, as well as of the manufacture of *screws, pens, pins, electro-plate, and jewellery*. *Nails* and *chain-making* are localised at Cradley Heath; *locks* at Walsall and Wolverhampton; and *keys* at Wednesbury. Sheffield and its neighbourhood are famous for *cutlery* and *tools* of all kinds, as well as for *armour plates, ammunition, and rails*. The *cutlery trade* is centred in Sheffield largely because it is near the coal and iron mines, but also because the stone found in the neighbourhood makes particularly fine grindstones. The making of *bicycles* and *motor cars* is carried on at Coventry, a town once noted for silk and ribbons. The famous *ordnance* factories at Elswick on the Tyne, and at Barrow, give employment to a large number of men. Swansea, Llanelli, and Cardiff on the South Wales coal-field are all noted for the making of *zinc* and *tin-plate*. Falkirk in Stirlingshire makes *fire-stoves* and other articles of cast-iron. Swansea is the chief seat of *copper-smelting*, and now gets its supply of copper ore from South America and elsewhere, instead of from Cornwall and Devon as formerly.

*Shipbuilding* is now carried on at various places on the Clyde, Tyne, Wear, and Tees, at Belfast in Ireland, and at Hull, Liverpool, and Barrow. The Thames is no longer famous for its shipbuilding; but the shipbuilding on the Clyde at Greenock, Port Glasgow, Dumbarton, and Glasgow is the most important in the world. There are government *dock-yards* and *naval factories* at Chatham, Sheerness, Portsmouth, Devonport, Pembroke, and Rosyth, and a great *arsenal* at Woolwich which employs several thousand men.

## Textile Industries.

### (a) Cotton Goods.

The textile industries, the mainstay of British trade, employ directly one million people. *Cotton manufactures* are first in order of importance. The cotton was imported exclusively at Liverpool, until the opening of the Manchester Ship Canal in 1894. Almost all the cotton factories of our country are situated in Lancashire and Lanarkshire, particularly



Warping Room in a Lancashire cotton mill

in the former county, and the reason for this localisation is the fact that the climate and water of these two counties are specially favourable for this manufacture, which requires a fairly moist atmosphere for successful spinning and weaving. Manchester manufactures little, but is the commercial centre for cotton, the actual spinning and weaving being carried on in the surrounding towns, especially Ashton, Blackburn, Bolton, Burnley,

Bury, Oldham, Preston, and Rochdale. Dyeing and calico works are numerous in Lanarkshire, and Paisley is noted for its cotton thread.

(b) Woollen Goods.

The woollen manufacture is first in order of antiquity but second in order of importance. Its chief centres are in Yorkshire, the west of England, Wales, and the Tweed valley. Most of the English factories are in Yorkshire, where such large towns as Leeds, Bradford, Halifax, and Huddersfield are favourably situated near the great coal-fields and with an excellent water supply. The west of England woollen centres are at Stroud in Gloucestershire and Bradford in Wiltshire. The Welsh towns of Welshpool, Montgomery, and Newtown are specially famous for *flannel*. The Scottish towns of Hawick and Galashiels are famous for the making of *tweeds*. Besides these centres, there are various woollen industries in isolated towns. Thus Rochdale in Lancashire and Witney in Oxfordshire specialise in *blankets*, Kidderminster and Wilton in *carpets*, and Leicester in *hosiery*. Many small towns in Ireland and the Hebrides are engaged in the making of *cloth* or *tweeds*.

(c) Linen goods.

Flax, like wool, is a home product, and as it is mainly cultivated in the north-east of Ireland, we find that linen is the chief manufacture of Ireland. Belfast is the most important centre, and Lisburn, Lurgan, and most of the Ulster towns manufacture *lawn*, *cambric*, and *fine linen*. This industry has long been pursued in the east of Scotland at Kirkcaldy and Dunfermline. Coarser goods, such as *canvas* and *sail-cloth*, are woven at Dundee, Brechin, and Arbroath. Linen is little manufactured in England, and Barnsley and Leeds are the only towns of importance that deal with it.

(d) **Silk goods.**

The silk industry, largely introduced by the French refugees in 1685, has gradually declined and is now of little importance. Spitalfields and Bethnal Green in London were long famous for silk-weaving; now this manufacture is associated with Braintree in Essex, Macclesfield, Derby, Coventry, and Leek.

(e) **Other Industries.**

*Chemical industries* are of the greatest importance in the modern industrial world. *Sulphuric acid* is manufactured in Glasgow, South Lancashire, and the Tyne towns. *Glass-making* is the principal industry at St Helens and very important at Newcastle. *Soap* is made at Port Sunlight, West Ham, and London. The district known as "the Potteries" has been the chief seat of the *earthenware* trade for more than 100 years; Stourbridge makes *stoneware* from fire-clay; Derby and Worcester are famous for their *porcelain*. The china clay is brought from Cornwall and Devon and the flints from the Thames. *Paper* is made where there is plenty of pure water, and the chief paper mills are at Maidstone and other places in Kent, in Berkshire, Midlothian, and Aberdeen. The industries connected with *printing* are chiefly centred in London, Edinburgh, and Glasgow. *Straw plait* is manufactured at Luton. *Boots and shoes* are manufactured where cattle are plentiful and where coal is cheap; Northampton, Leicester, Stafford, and Norwich are centres of this trade. *Gloves* are made at Yeovil in Somersetshire. Manufactures of drink are chiefly of *beer* in England and *whisky* in Scotland and Ireland. London, Edinburgh, and Dublin have world-famous breweries, and Burton-on-Trent probably brews more beer than any other town in the world: this is mainly due to the excellent water supply. *Perry* is made in Worcestershire and Herefordshire, and *cider* in Devon and Norfolk. Manufactures of articles of food are very numerous. The curing of *bacon* in Ireland, Wiltshire,

and elsewhere is of considerable importance; and at most of the great fishing centres, such as Yarmouth, *drying, salting, and smoking fish* gives employment to thousands of people. London has large *jam* factories, and Dundee is specially famed for its *marmalade*. *Dairy produce*, such as *butter* and *cheese*, is made in Ayrshire, Cheshire, the Midlands, Gloucestershire, the south-west of England, and in many parts of Ireland. *Mustard* and



"Pressing the Heel," Ocean Works, Northampton.

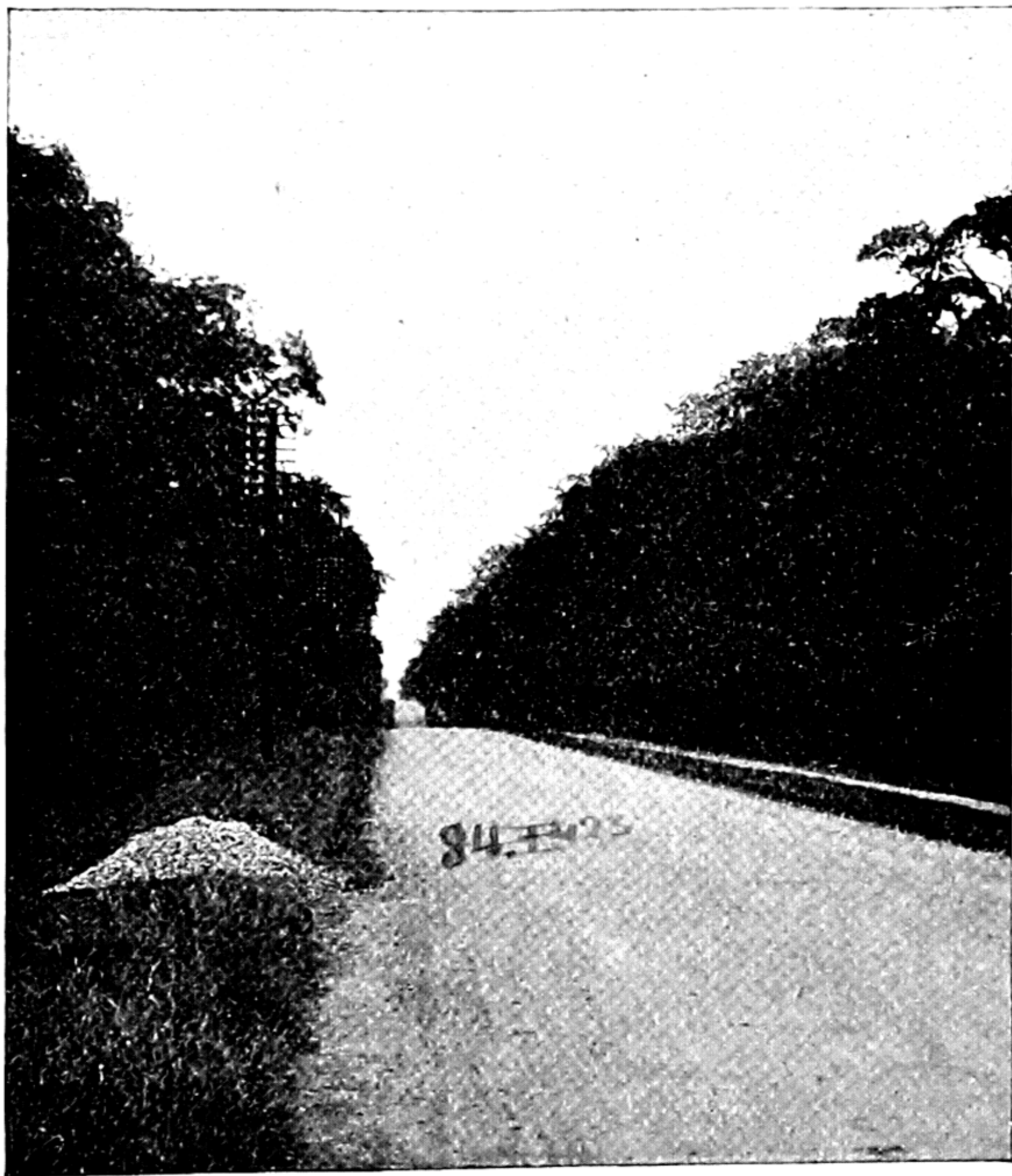
*starch* are made at Norwich, and *biscuits* in London, Reading, Edinburgh, Dublin, and elsewhere. *Sugar* is refined at Greenock, and, combined with cocoa, is made into *chocolate* at Bristol, York, Bournville, and other places.

## Internal Communications.

### (a) Roads.

In the earliest days of our country's history, there were only paths or trackways through the forest which then covered our land. In some localities

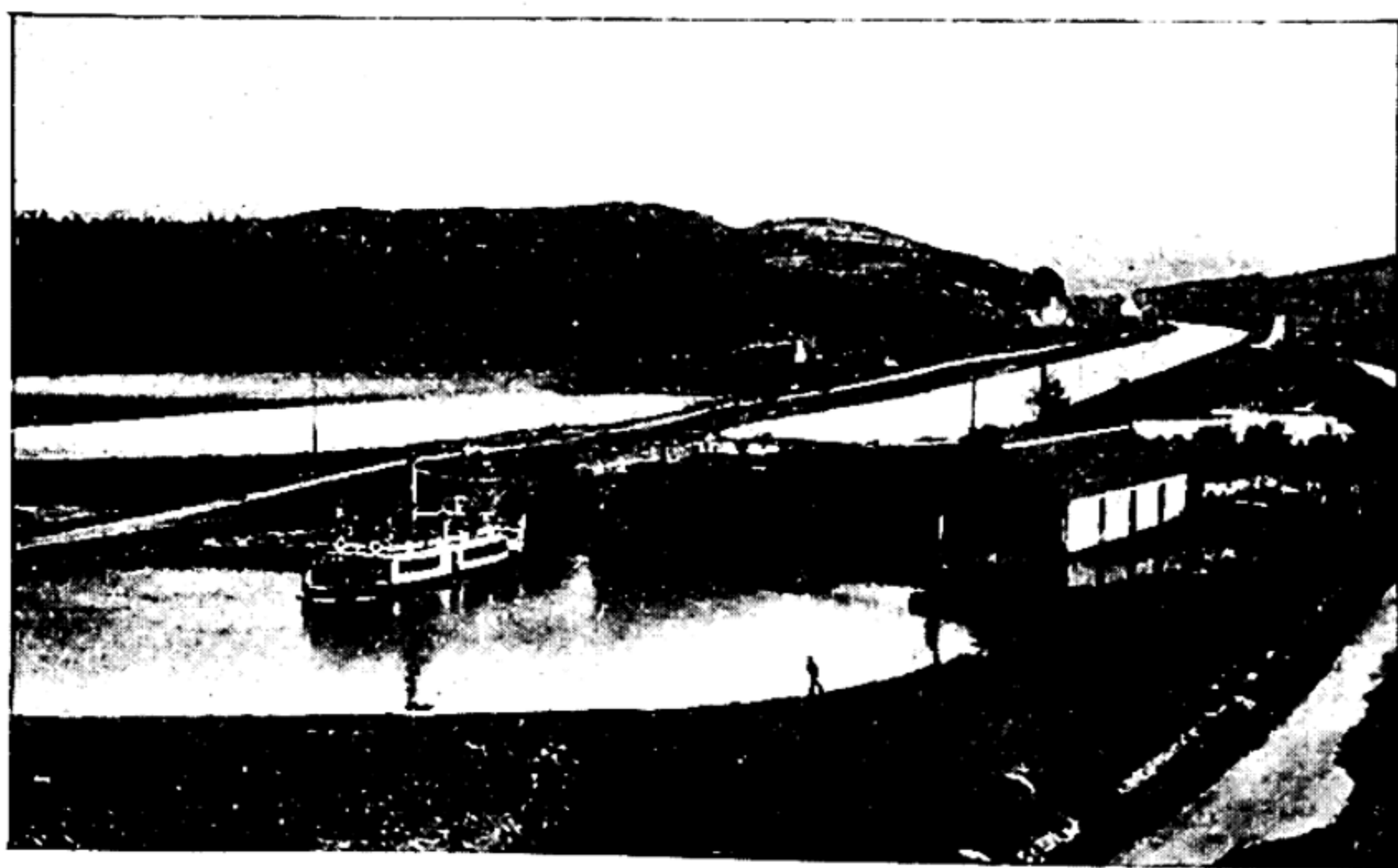
these British trackways may still be traced, but they have long ceased to be of importance. The Romans were the great road-makers, and for many centuries



Ermine Street.

their roads were the chief means of communication in Britain; some of them are still in almost perfect condition, while others form part of the foundation of

roads now in use. The course of these roads was planned with skill, but with little knowledge of the general features of the district. Most of the Roman roads converge on London, and coincide in a remarkable manner with our modern railway communication. It may be stated broadly that down to the end of the eighteenth century the general condition of the roads in the country was bad, for they were almost impassable and beset by highwaymen. From the beginning of the nineteenth century, a new era in road-making began, and now there are good roads in all parts of the British Isles.



Lock on the Crinan Canal.

(b) Canals.

The construction of canals was brought about by the necessity for some cheaper mode of conveying heavy goods than by wagons along the high roads. They were constructed just before the advent of railways, and for some years they were very prosperous. Now many of them are neglected or derelict owing to the railways by which they have been superseded. The canals in the United Kingdom extend over a length

of 4673 miles, of which more than three-fourths are in England and Wales. In Scotland, the *Caledonian* and *Crinan* canals were designed to save coasting vessels a stormy passage round the north of Scotland. The *Manchester Ship Canal* admits ocean steamers into the heart of the Lancashire cotton district. The *Gloucester and Bristol canals* are simply harbour arrangements. All the other canals are for the conveyance of goods by barges, and the most important connect the Thames, the Severn, the Trent, the Yorkshire Ouse, and the Mersey in England, and the Forth and Clyde in Scotland. The existing canals are chiefly used for mineral traffic, but they are not equal to the demands of the present time. In Ireland the *Royal* and the *Grand* canals run from Dublin to the Shannon, and another connects Lough Neagh with the sea.

### (c) Railways.

The introduction of railways has revolutionised the internal traffic of our land, and has largely affected the distribution of the population. The railways form a network over the coal-fields and commercial districts of the kingdom, and penetrate the less populated regions. Between the large towns the shortest available routes have been selected for them, and these routes frequently follow the older high roads. For their construction, hills have been tunnelled, ridges have been cut through, viaducts and embankments have been thrown across valleys, and rivers have been spanned by bridges and tunnelled at enormous cost. At the present time, about 24,000 miles are open for traffic in the British Isles, of which about 16,000 miles are in England and Wales. All the great lines of Britain radiate from London, though there are many minor centres where they converge. London is locally served by the *Metropolitan* and *District* Railways and by many tube railways, which are among the busiest passenger lines in the world, conveying as they do a large part of the

commercial population of the metropolis to and from the City daily.

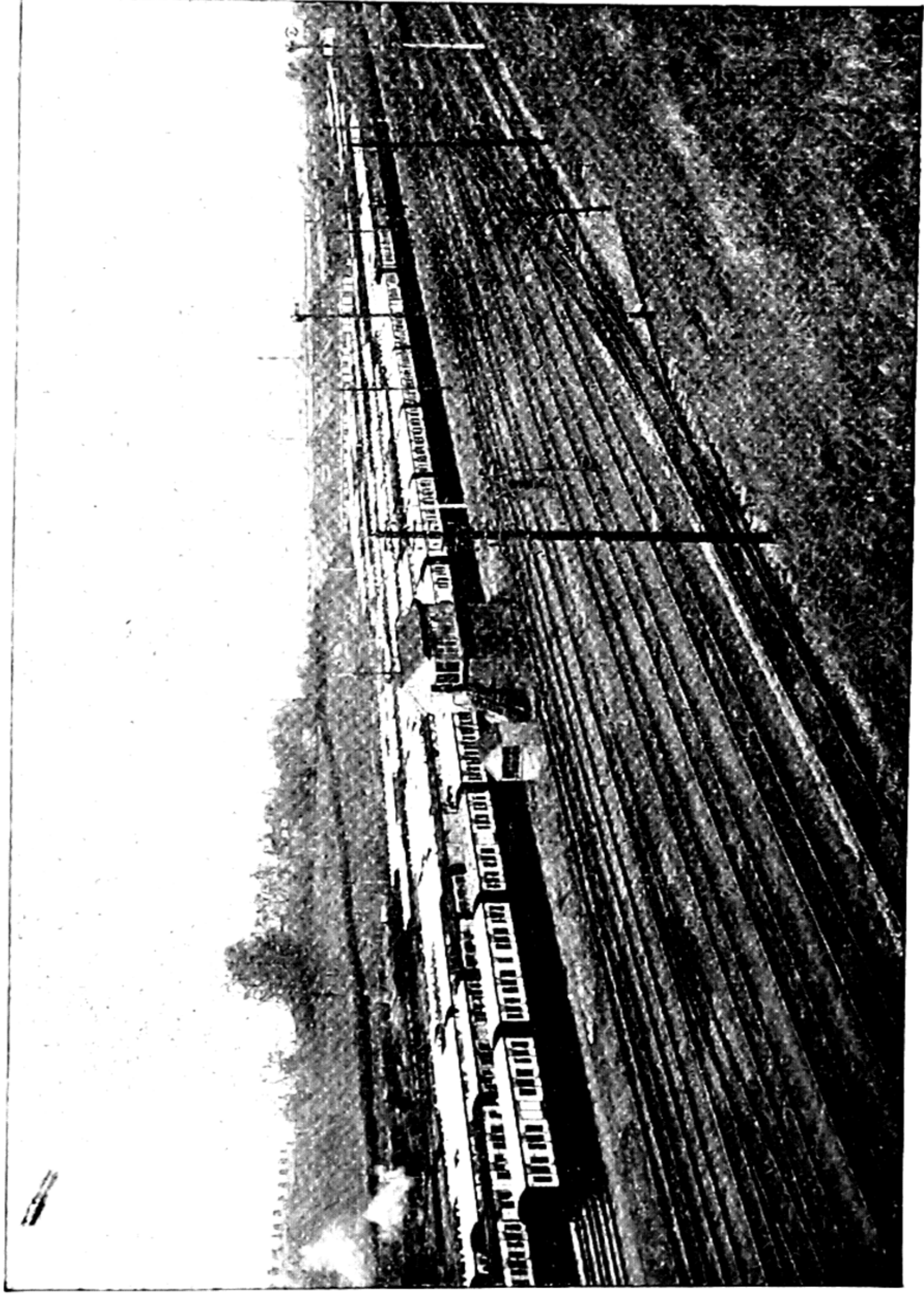
The chief *British railway lines* are as follows :

The *Great Western*, with Paddington as its terminus, is the largest in England. It has branches north and south to places as far apart as Chester, Milford, Barnstaple, and Penzance. The Severn Tunnel connects with the South Wales district, and from Fishguard there is steamer communication with Rosslare in Ireland. Mail steamers leave Weymouth daily for the Channel Islands.

The *London and North-Western*, with Euston as its terminus, is the second in point of length. It runs through Rugby, Stafford, and Crewe, spreads through Wales (its mail steamers run from Holyhead to Dublin) to Liverpool, and through the cotton district to Carlisle. Here it connects with the *Caledonian* system, passing through Scotland to Glasgow, Edinburgh, Perth, Dundee, and Aberdeen. From Perth the *Highland* line extends to the extreme north and west of Scotland. Mail steamers connect Thurso with Orkney, and Strom Ferry with Stornoway.

The *Midland*, with St Pancras as its terminus, runs nearly parallel to the last railway to Manchester, and northward from Sheffield through the Yorkshire woollen district through the Aire Gap to Carlisle. Here it joins the *North British* line across Scotland to Edinburgh, and the *Glasgow and South-Western* to Glasgow. Another line runs from Derby through Birmingham and Gloucester to Bristol. From Heysham, on Morecambe Bay, steamers run to Belfast.

The *Great Northern* runs from its London terminus at King's Cross to Peterborough and York. At York it becomes the *North-Eastern*, and at Berwick joins the east coast branch of the *North British* which leads to Edinburgh, thence by the Forth and Tay Bridges to Perth, Dundee, and Aberdeen. It also connects Glasgow, with the *West Highland* line, which runs to Fort William and beyond.



London and North-Western Railway Co.'s Carriage Works, Wolverton.

The *Great Central*, one of the more recent lines, leaves London at Marylebone and runs direct to Manchester, Sheffield, and other towns of the great manufacturing districts, and to Grimsby in Lincolnshire.

The *Great Eastern* leaves London at Liverpool Street and has two main lines, one through Essex to Harwich and Yarmouth, and the other through Cambridge and Ely to Lynn and Norwich. Steamers run from Harwich to continental ports.

The *South-Eastern and Chatham* from Charing Cross, Victoria, Holborn, and Cannon Street as the London termini, and the *London, Brighton, and South Coast* with termini at Victoria and London Bridge, serve the counties of Kent, Surrey, and Sussex. There is connexion with the continent by steamers from Queenborough, Dover, Folkestone, and Newhaven.

The *London and South-Western*, having its terminus at Waterloo, runs through Salisbury to Exeter, and has branches to most of the coast towns between Portsmouth, Southampton, and Plymouth. From Southampton steamers run daily to the Channel Isles and Havre.

There are various lines not directly connected with London, and the chief of them are the *Cambrian* in Wales, the *Cheshire* lines, the *Lancashire and Yorkshire*, and the *Great North of Scotland*.

*Irish Railways* extend in all directions from Dublin. The *Dublin, Wicklow, and Wexford* is a short line running southward along the east coast. The *Great Northern* serves Ulster, uniting at Belfast with the *Belfast and Northern Counties* line, which runs to Londonderry. The *Midland Great Western* proceeds from Dublin to Mullingar, and thence by two branches to Galway and Sligo. The *Great Southern and Western* branches from Dublin over the south-west of Ireland to Cork and Killarney. It is crossed by the *Waterford and Limerick* line, which extends beyond Limerick toward the north-west and south-west.

## Trade and Commerce.

The British Islands occupy the most favourable position in the world for ocean communication with all other places. The British mercantile marine is the largest in the world, and the numerous British seaports afford an exceptional amount of good accommodation for shipping. In considering the magnitude of British commerce it must be further remembered that there is an abundance of capital in our country; that our colonial and other possessions are in all parts of the world; and that the English language is the most widely used in both hemispheres. Nor must it be forgotten that the personality of the British trader and merchant is a most important factor, for the skill, endurance, and energy of the British are proverbial. The total shipping in the British home and foreign trade is best represented by a few figures: 8561 vessels are in this service; their tonnage is more than 18,000,000; and they are manned by about 290,000 sailors. The total annual value of British trade was upwards of £3,489,000,000. The value of the imports was largely in excess of the exports.

The imports are chiefly food and raw materials, while the exports are mainly coal, iron, steel, machinery, and manufactured articles, especially cotton, woollen, linen, and jute. About one-fifth of the imports are from British possessions and about one-third of the exports are sent there. It may be noted that India is the chief market for our cotton goods. Among the imports, grain of all kinds, but principally wheat, takes the first place, and this comes from the United States, Argentina, Canada, and Australia. The countries with which we do the largest trade are the United States, Australia, Canada, Italy, France, Argentina, Holland, Belgium, and Egypt.

Large quantities of British exports consist of goods that have first been imported; this trade is known as "entrepôt" trade. A considerable coasting trade is

carried on between all the ports of the British Isles. Our commerce is nominally under free trade conditions, but there are customs duties on tobacco, tea, sugar, and alcoholic liquors which yield a large yearly revenue.

### The great seaports of the British Isles.

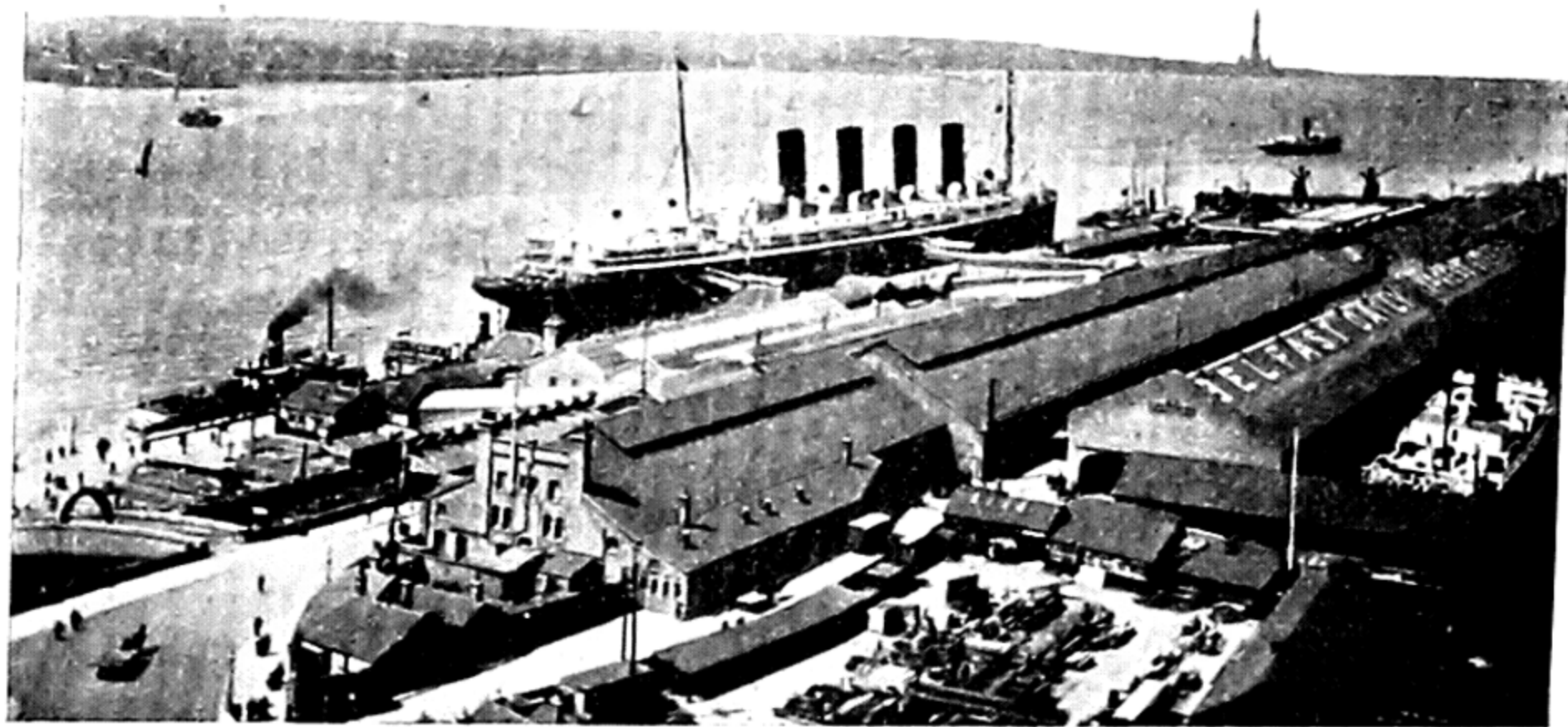
There are many commodious natural harbours round the coast of the British Isles, but as some of them are remote from the centres of industry they are not so useful as they might be. Our great seaports owe their importance to their position on a deep water tidal estuary, as London and Glasgow; or to their convenience of position for the collection and distribution of goods, as Belfast and Bristol; or to their proximity to centres of industry and production, as Liverpool and Hull. Other seaports have risen because of the natural advantages of the harbour on which they stand, as Southampton, Cork, and Falmouth; and others have become great because of the wealth of their neighbourhood in some particular product in wide demand, as Newcastle and Cardiff.

It is interesting to note that the first ten of our seaports receive more than 80 per cent. of the imports of the British Isles. London comes first in the value of its imports, but is surpassed by Liverpool in the value of exports.

*London* as a port includes the greater part of the estuary of the Thames, with a large and complicated system of docks on the reaches of the river extending to Tilbury in Essex. London has always stood first among the British seaports and is the greatest seaport in the world. Besides its great foreign trade it has an entrepôt trade of considerable importance, which is owing to its nearness to some of the greatest continental ports. Nearly all the tea, coffee, cocoa, spices, and wine that are brought to England come first to London, and the metropolis is also the great port for raw wool. London with its immense population is

rather a mercantile than a manufacturing city, and its position as the metropolis makes it the headquarters of the principal railway and banking companies, while the Bank of England and the various Exchanges are the centre of the financial world.

*Liverpool*, on the Mersey, includes the whole of the estuary below Runcorn, while *Manchester* extends from Runcorn to the head of the Ship Canal. The docks of Liverpool rival those of London, and its imports are



The Landing Stage at Liverpool.

mainly cotton, grain, and cattle from America, and the produce of West Africa. It is the nearest and greatest outlet for the busy Lancashire factories and has a large part of the passenger trade with America.

*Cardiff*, on the British Channel, is, with Barry Dock, the chief port for the export of the coal and iron of South Wales.

*Newcastle*, with *North and South Shields*, exports mainly coal, iron, and steel goods.

*Hull* is a progressive seaport, exporting large quantities of cotton and woollen goods, and receiving imports from all parts of the world, but chiefly from the Baltic and North Sea ports.

*Glasgow* is second in population to London and stands on the Clyde, which has been deepened at great expense for the development of the port. It exports coal, iron, and manufactured goods, and imports ores and raw materials. It is not only a great port but one of the chief centres of ship-building.

*Bristol*, on the Avon, was formerly second only to London as a port. Its great trade was with America in sugar and tobacco, but it declined in importance as great vessels could not reach it. Extensive docks have, however, been recently constructed at Avonmouth and it has considerable trade in tobacco, chocolate, and timber.

*Portsmouth* is an important naval station and the headquarters of the British fleet. It has the largest government dockyard in England. The triple port of *Plymouth*, *Devonport*, and *Stonehouse* is a naval station and a port of call for ocean steamers.

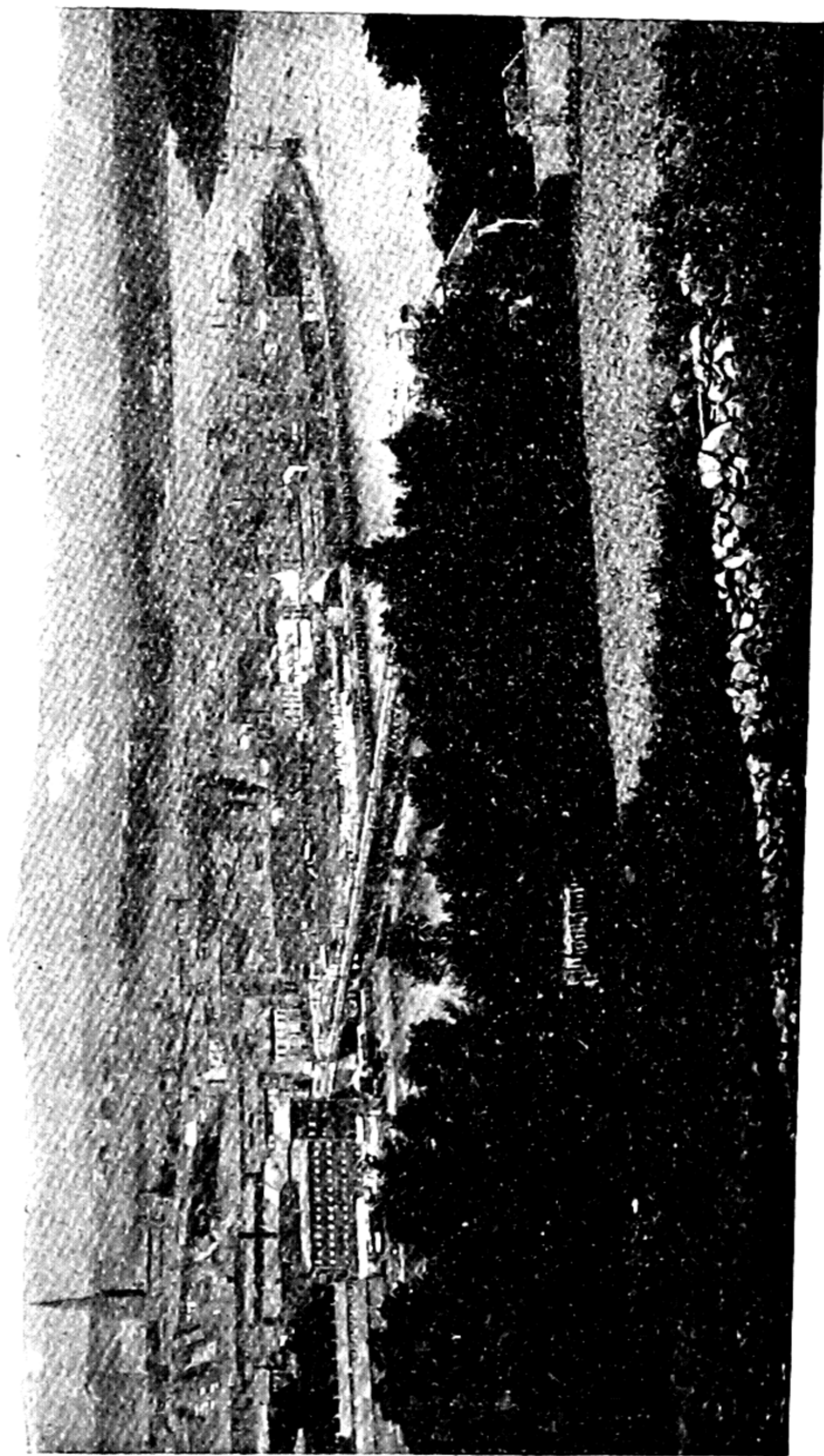
*Southampton* is situated on a fine natural harbour, and besides a large shipping trade has an important and increasing passenger trade with America and South Africa.

*Leith*, the port of Edinburgh, exports mineral and manufactured goods and has much Baltic trade.

*Dover*, *Folkestone*, and *Harwich* are important as passenger ports for the Continent. Dover has recently had a great harbour constructed at enormous expense.

*Peterhead*, on the east of Scotland, is also having constructed a national harbour of refuge for vessels of any size.

The Irish ports have small foreign trade. *Dublin*, *Belfast*, *Cork*, *Waterford*, *Limerick*, and *Londonderry* import wheat and maize, and export to British ports cattle, pigs, butter, and other produce. *Queenstown*,



Londonderry.

in Cork harbour and *Moville*, on the Foyle, are calling places for vessels to and from America.

*Chatham*, *Sheerness*, *Devonport*, and *Pembroke* are government dockyards, where men-of-war are built, repaired, and equipped.

*Harwich* has a good natural harbour and is an important naval base for the east coast. It is also a packet station for the Continent, having communications with *Esbjerg* and the Hook of Holland.

*Rosyth* on the Forth is a naval base which was of great value in the war, 1914–1918.

## Government and Administration.

### (a) Imperial.

The government of the United Kingdom of Great Britain and Ireland is a limited monarchy, consisting of the King, Lords, and Commons. The title of the King is thus comprehensively given in the Royal Titles Act, "George V by the Grace of God of the United Kingdom of Great Britain and Ireland and of the British Dominions beyond the Seas King, Defender of the Faith, Emperor of India."

The supreme *legislative power* of the British Empire is vested in Parliament, which consists of two Houses, the Lords and the Commons. The *House of Lords* consists of peers by hereditary right, peers created by the Sovereign, English bishops, Irish peers elected for life, and Scottish peers elected for each parliament. The number of peers at present is about 726.

The *House of Commons* consists of 707 members representing County, Borough, and University constituencies in the British Isles. Nearly one-half of the population are electors.

Under the Government of Ireland Act (1920) six of the Ulster counties form the Government of Northern Ireland with its capital at Belfast. In 1922 the rest of Ireland was constituted a Free State having its capital at Dublin.

(b) Local Government—in England and Wales.

In each county there is a Lord-Lieutenant, a Sheriff who represents the Crown, and other officers. For each administrative county there is a County Council, and there are sub-divisions either Urban or Rural. In all the large towns the local business is administered by a Municipal Corporation consisting of the lord mayor or mayor, aldermen, and burgesses.

In *Scotland* the local government follows in the main that of England and Wales. Parish Councils are established in every parish, and the Municipal Bodies in Scotland have bailies and provosts instead of aldermen and mayors.

In *Ireland* there are Councils for counties and rural districts. The cities of Dublin, Belfast, Cork, Limerick, Londonderry, and Waterford are county boroughs. The towns are partly corporate and partly governed by Commissioners, while certain boroughs have a mayor, aldermen, and councillors.

## Counties and Shires.

(a) In England and Wales.

For a thousand years and more the county, or shire, in England and Wales has been considered the chief unit of local government. Before the Norman conquest the word "shire" simply meant a division, and was applied to any portion that was shorn off or cut off from a larger division. The word "county" is due to the Norman invaders, who identified the old English shire with their own *comitatus*, the district of a *comes* or count.

The counties of England and Wales differ considerably in their origin. Such counties as Essex, Kent, and Sussex are probably survivals of former kingdoms in old English times, while such counties as Nottinghamshire, Leicestershire, and Northamptonshire are

shares, or shires, of the Kingdom of Mercia. A knowledge of the historic growth of our counties helps to explain the great differences of their size, as well as the formation of their boundaries, their local dialects, and the peculiar customs and character of their peoples.

*(b)* In Scotland.

Scotland is also divided into shires or counties, but this division is of comparatively modern times. Long before the shires were formed different parts of Scotland had territorial names, some of which are preserved and describe districts that do not coincide with the modern counties. Thus in the Highlands we get names of such historical districts as Strathspey, Angus, Lochaber, Badenoch, Athol, and Breadalbane, and in the Lowlands such familiar names as Galloway, Clydesdale, Tweeddale, and Lauderdale. These ancient divisions have now no relation to the present government of the country, and for all political purposes Scotland is divided into 33 shires or counties. In geographical character these counties differ from those of England, just as the two countries differ in physical structure. In both England and Scotland the boundaries of the counties are not mere artificial lines; on the other hand they are often clearly defined by those features that have determined the river valleys and the river basins in which they are situated.

*(c)* In Ireland.

In this country the river system, except in the case of the Shannon, plays little part in the boundaries and grouping of the counties. Here the shires or counties represent the territories of old Irish tribes or divisions made by the English settlers. Before the invasion of the English there were five kingdoms—Ulster, Connaught, Munster, Leinster, and Meath; the two last eventually became united. These kingdoms still survive

in the four Provinces which comprise the 32 counties of Ireland.

### **Towns.**

At the census in 1921 there were 101 towns in the British Isles with a population of over 50,000, and of this large number no fewer than 46 towns had more than 100,000 people. This marks for us the fact that by far the larger portion of our people are now living in towns, while a hundred years ago, or even less, the conditions were the reverse. This, of course, has been brought about by the Industrial Revolution of the last hundred years or so, and England and Wales and part of Scotland can no longer be described as agricultural.

### **Origin of British Towns.—Their Rise and Development.**

The origin of towns was often due in the early stages of our history to the need of protection against enemies. Thus the sites of the early towns were chosen on hill-tops or on peninsulas nearly surrounded by the loop of some river. These may be called strategic sites; towns having such an origin are very numerous, but we need mention only Lincoln, Durham, Carlisle, Perth, and Stirling.

As time went on, settlements were probably commercial in their origin, and were located at some ford, at the outlet of a defile or gap, or where two tracks crossed each other. Such places would be visited by travellers and would be good centres for the exchange of goods. The number of such towns is very large, and Oxford and Bedford may serve as examples. Carlisle is a conspicuous example of a town growing up at the mouth of a defile; Guildford, Dorking, and Reigate are excellent examples of towns on the gaps through the North Downs; and Carnarvon, guarding the southern opening of the Menai Strait, Bangor, at the junction of two great routes, and Conway, commanding

the northern end of the Menai Strait and holding the estuary of the Conway, are good examples in Wales. Perth, on the Tay, in the opening between the Sidlaw and the Ochil Hills, commands the only means of access to northern Scotland and holds the key of the estuary. It was the great importance of its site that made Perth in early times the frequent residence of the Scottish kings.

Many of our largest towns have developed at the mouths of navigable rivers. London, Bristol, Liverpool, and Glasgow are typical of this class. In some cases fishing villages on the sea-shore have developed into trading ports; of such Wick, Whitby, and Grimsby may be mentioned.

Some of our towns trace their growth to their position as health resorts, either by the sea or inland. The inland health resorts are frequented by reason of the mineral springs which are of curative value. Harrogate, Buxton, Matlock, Bath, and Tunbridge Wells in England, Llandrindod Wells in Wales, and Strathpeffer in Scotland are good instances of such towns. The seaside resorts are very numerous, many of them being the growth of the last 50 years. Popular seaside towns such as Brighton, Scarborough, Blackpool, and Douglas in the Isle of Man have large accessions from the industrial districts to their resident population in the holiday seasons. Then there are towns which have risen because of their advantageous position as tourist centres. Killarney in Ireland, Oban in Scotland, and Ambleside in the Lake District are typical of this class of town. Various towns on our rivers, such as Richmond and Henley on the Thames, owe their present importance to the facilities for boating; while numerous towns both inland and by the sea are sought after for their golf-courses. There are some of the smaller and older towns which still attract thousands of people at various seasons; Stratford-on-Avon, Windsor, and Canterbury are among those that appeal to the lovers of antiquity.

The growth of the great industrial towns on the coal-fields and on the railways has already been noticed, but here we may refer to an interesting fact in connexion specially with London. In its neighbourhood there has grown up a whole circle of residential towns in Middlesex, Essex, Surrey, and Kent. Willesden, Walthamstow, West Ham, Croydon, and Chiselhurst owe their growth to the overflow from London, and even places as far away as Southend in Essex and Brighton ("London by the Sea") are largely dependent on the metropolis.

This brings us to the question of the origin of the three capitals—London, Edinburgh, and Dublin. Before London, Winchester was the capital for some time; but the choice of London as capital was wisely made. It is situated far up the river, so as to secure it against hasty attack; it has marked advantages of situation, for the main roads and railways converge to it; and it is also a good place for trade and commerce. The geographical importance of Edinburgh was always considerable, for it is situated where the main road from England opened into the centre of the plain, and where the Forth formed the highway of communication with Europe. Dublin has a position at the opening of the central plain of Ireland that faces England, thus making it the natural centre of internal and foreign trade.

### **Decay of Towns.**

The Industrial Revolution not only brought about the growth of new and large centres of population, but it was also the cause of the decay of many flourishing market and county towns. There are some of the latter which are county towns only in name and have been long outstripped by their younger rivals. The county town of Warwick and the city of Birmingham in the Midlands, and the county town of Chelmsford and the great industrial town of West Ham in Essex, will illustrate this fact. Some of the cathedral cities have dwindled; places with flourishing fairs, such as Stourbridge,

are now of no importance; and towns such as Walsingham, that once drew pilgrims by thousands, are now barely known even by name. There are instances where a former capital, as Old Sarum, has been transferred to a new site as Salisbury. The Reform Bill of 1832 disfranchised a number of such towns in all parts of the country, but more especially in the south of England.

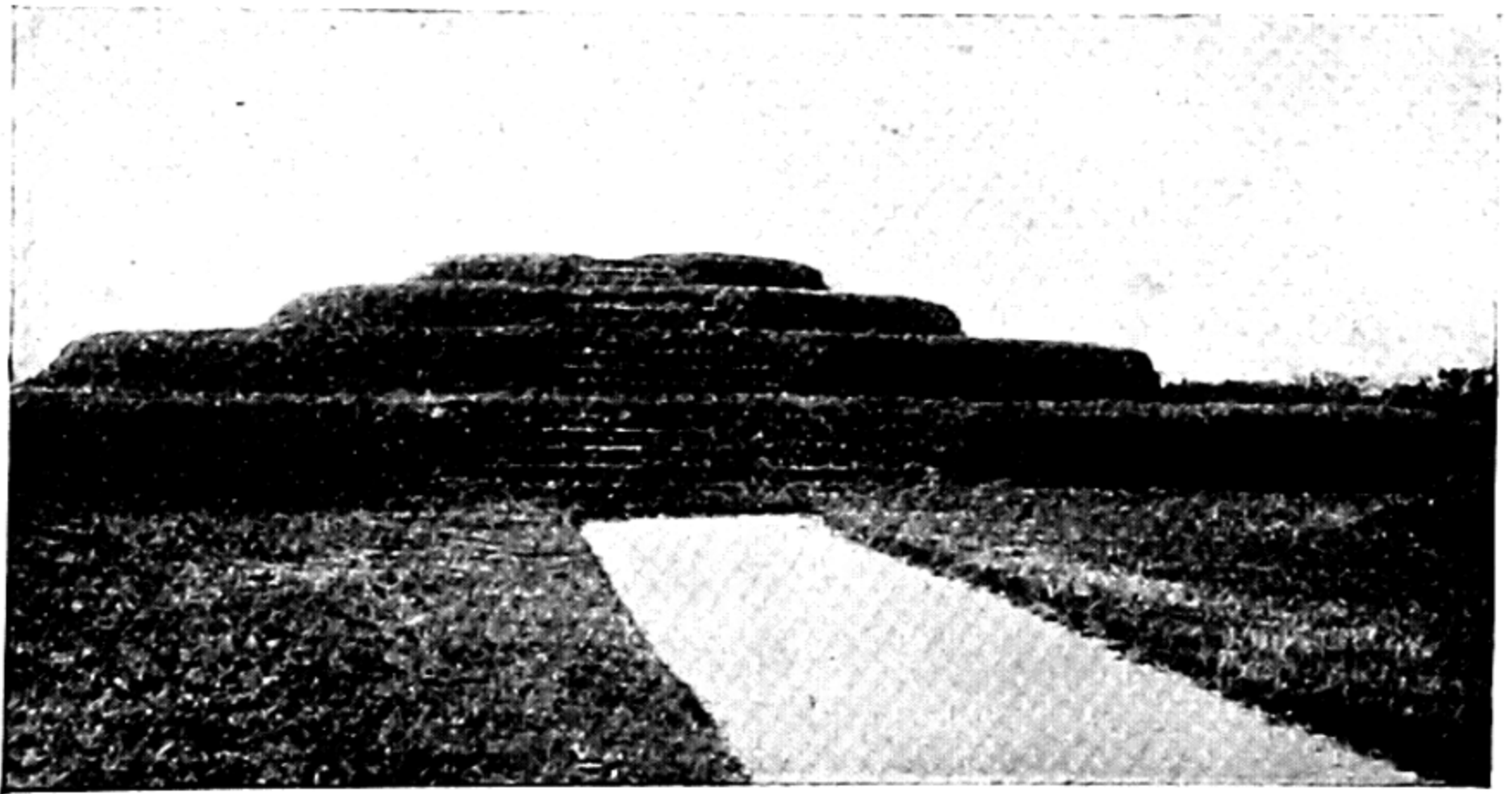
In many cases the decay of these towns is attributable to economic causes; but there are many towns round our coasts that have declined, or even ceased to exist, owing to the work of nature. Berwick-on-Tweed, Poole, Wells, and others have declined from their former importance, while some of the Cinque Ports in the south-east of England are now almost forgotten. In some cases the sea has retreated or shingle has accumulated, so that places like Hythe, Winchelsea, and Romney now do practically no trade.

## Isle of Man.

The Isle of Man, situated in the Irish Sea, has an area of 220 square miles of which about two-thirds are cultivated. A chain of mountains extends from north-east to south-west and has for its highest point Snaefell (2024 feet). Much of the coast scenery is bold and picturesque, while on the south it is extremely grand.

The agricultural products consist of oats and barley, turnips and potatoes, and grasses; and the mines yield lead, zinc, salt, and copper. The fisheries, chiefly herring and cod, afford employment to several hundred men and boys. The Manx people are of Celtic origin, with a strain of the Scandinavian; their language is now little spoken. The population is 60,000, and the people have home rule—their own laws, law-officers, and courts of law. The Isle of Man is administered by the Court of Tynwald, consisting of the Governor appointed by the Crown, the Council for Public Affairs,

and the House of Keys. The island was ruled by Welsh kings till near the end of the ninth century, and then by Scandinavian kings. It then passed to the Scottish kings; but in 1290 it came under the protection of the English and was granted to the Stanley family, who ruled it till 1735, when the Duke of Atholl became its lord. The interest of the Atholl family ceased in 1829, when it passed to the British crown. The Isle of Man forms the bishopric of Sodor and Man, the bishop of the Sudoreys—Southern Isles—having formerly been



Tynwald Hill, St John's, Isle of Man.

attached to Man. *Douglas*, the modern capital, a seaport and popular watering place, has communication with Liverpool by means of a swift fleet of steamers. A railway places the capital in communication with the other towns and ports—*Castletown*, *Peel*, and *Ramsey*.

## Channel Islands.

The Channel Islands are a group of islands which has remained subject to the British crown since the Norman Conquest. The principal islands are Jersey,

Guernsey, Alderney, and Sark, and there are numerous islets, such as the Casquets, the Minquiers, etc. The area of the whole group is about 75 square miles. The scenery is beautiful and the climate excellent; the produce of the islands is mainly agricultural. The chief crops are potatoes, hay, wheat, turnips, and other vegetables; and the excellent breeds of horned cattle—"Alderneys" and "Jerseys"—are famous. The chief exports are granite, fruit, and early potatoes. The people, who number about 90,000, speak English in the towns; elsewhere the vernacular is a patois of Norman French.

The islands are administered according to their own laws and customs and are not bound by British Acts of Parliament. Jersey has its own lieutenant-governor, "states," and judges; Guernsey, Alderney, and Sark have a governor in common, but the two former have separate administration, and Sark is a dependency of Guernsey.

*Jersey*, the chief of the group, is only 14 miles from the French coast and 95 from Weymouth. *St Helier*, the capital and seaport, has nearly half the population of the island.

*Guernsey*, the second in size, has *St Peter Port*, the only town, for its capital.

## France.

### Position and Extent.

In shape France is roughly pentagonal, and is well situated between the Atlantic on the west to the Mediterranean on the south. The English Channel and the Straits of Dover form the separation from England, the two opposite coasts approaching within 21 miles of each other between Dover and Calais. The Pyrenees are a very definite physical boundary separating France and Spain on the south; while Belgium, Luxemburg, Germany, Switzerland, and Italy are on the

north-east and east. The area, including Corsica, is about 207,000 square miles ; the greatest length is 606 miles from north to south, and the greatest breadth 556 miles. France lost Alsace and part of Lorraine to Germany in 1871, but has since acquired colonies which now extend to upwards of 4,000,000 square miles, chiefly in Asia and Africa. Of these, Algeria is fast becoming a part of France, and is counted as such for purposes of administration.

### **Surface and General Features.**

The greater part of France consists of plains and undulating land, while the lofty Pyrenees and the Alps form the land frontier on the south and south-east. The French Jura and the Vosges on the eastern frontier are higher than any British mountains ; and Mont Blanc (15,780 feet) in the Alps belongs to France. The chief highlands within the French frontier belong to the central plateau, which has an average elevation of 2500 to 3000 feet and ends in the Cevennes, overlooking the Rhone valley. The whole of north-western France, except a few hilly tracts in La Vendée, Brittany, and Normandy, is covered with wide plains. Specially noteworthy is an extensive sandy region known as the Landes, extending between the Bay of Biscay, the Adour, and the Loire. This district is now intersected with canals and planted with trees, and is no longer a malarial region. The Auvergne is a central hilly district with several summits that were formerly volcanoes, of which Mont Dore (6188 feet) is the highest. It will be evident from a glance at the map that the coast line of France is relatively short, and there are really few good harbours. Its northern coast bears some affinity to the southern coast of England, but the only striking scenery is in Brittany, the counterpart, to some extent, of Cornwall and Devon. On the seaward side the extensive region of the Landes is fringed by salt lagoons. The Riviera coast, to the east of Toulon, especially at Cannes and Nice, is strikingly beautiful and is the resort in winter of

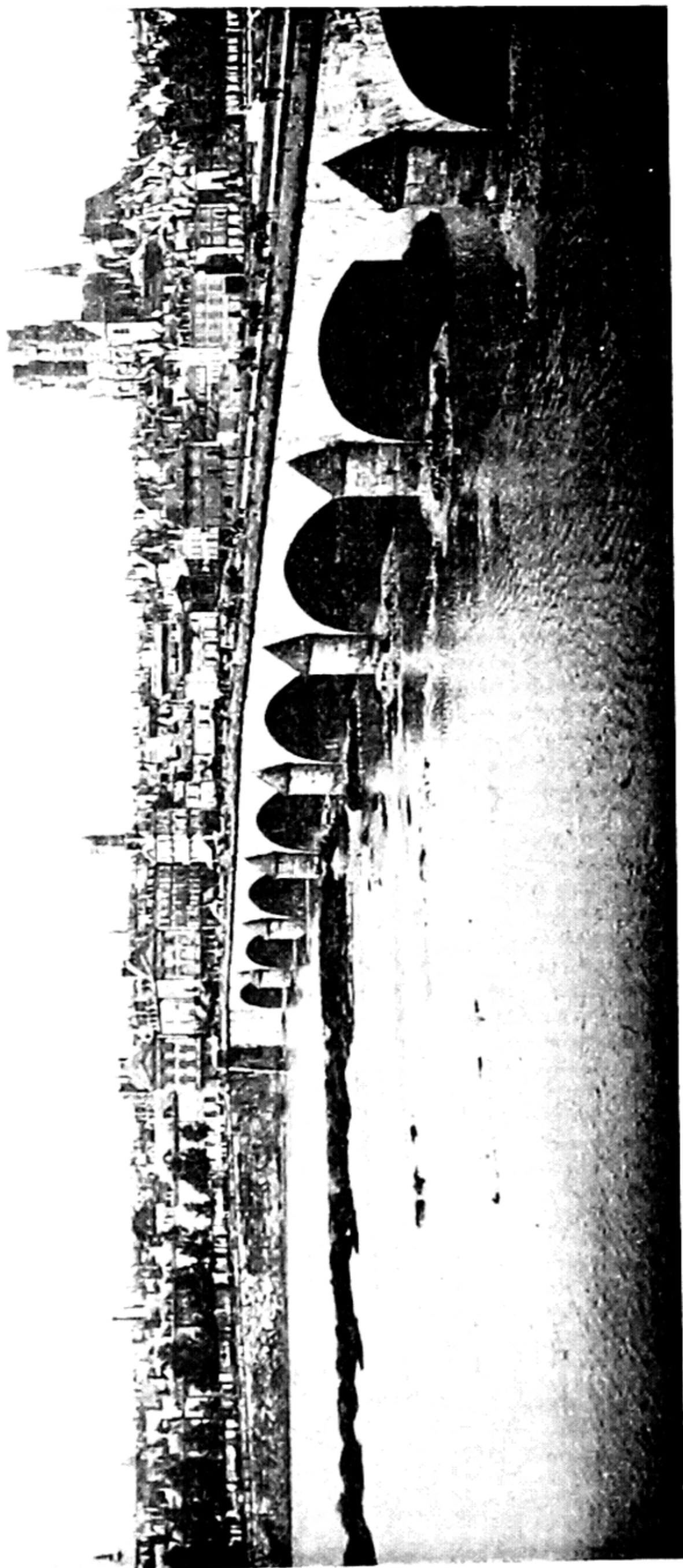
the wealthy. Except Corsica, France has no islands of importance, and those off the coast of Brittany and the Mediterranean are only detached portions of the mainland. The Channel Islands, between Brittany and the Cotentin peninsula, belong to Britain—the sole remnant of our once extensive French possessions.

### **Watersheds and Rivers.**

The central plateau forms the great watershed and from it flow, with one exception, all the chief rivers, generally in a westerly direction. The Rhone is the exception and, coming into France from Switzerland, it is the only river flowing south. The rapidity of its current lessens its commercial value. Its valley is between the Alps and the Cevennes and it enters the Gulf of Lions by a delta. France is a remarkably well-watered country, and its rivers are generally navigable. On the western side, the little Adour fringes the Landes, and the Dordogne and Garonne unite to form the Gironde, a fine marine estuary. The Loire, the longest river, drains one-fifth of France and becomes a great river after receiving the Allier. The Seine, the chief French river, flows through a wide basin, which this river and its tributaries have made the dominant part of the country from earliest historical times. The importance of the river navigation of France is shown by the fact that all the great westerly-flowing rivers are connected, directly or indirectly, with the Rhine or Rhone.

### **Climate and Rainfall.**

France has the advantage of a westerly maritime situation, together with a more southerly latitude than the British Isles, and it is therefore natural that it should have more sunshine. On the central highlands, however, the climate is more extreme and drier than on the west. On the whole, France has a very fine climate, and while not so continental as that of its neighbour on the east, it is not so maritime as that of



The Loire at Orleans.

England. The climate of Brittany is very similar to that of south-west England, and Pau, on the slopes of the Pyrenees, is deservedly famous as a health resort. The difference in altitude causes many kinds of climate to be encountered, from the mouth of the Loire, where frosts are unknown, to the summit of Mont Blanc with its perpetual snow. The range of temperature at Paris is somewhat wide at certain periods, and has been known to vary from 13° F. in winter to 95° F. in the summer. The rainfall is considerable on the western plains and generally decreases towards the east. The mean annual rainfall of France is about 29 inches, and while the Mediterranean coast district has a maximum of less than 20 inches, the Vosges district has 60 inches and the western portion of the Pyrenees has a maximum of 71 inches. The climate of Languedoc and Provence has to some extent an African character, for a temperate winter is succeeded by a torrid summer, moderated at times by the mistral.

### **Plants and Animals.**

As we might expect from the varying climate owing to the difference of altitude and exposure, the flora of France is rich. The chief forest trees are the oak, beech, elm, and maple, while the pine and fir are common to the mountains and sandy regions. Provence, in the south-east, is the garden of France and there eucalyptus, olive, and mulberry thrive. Throughout the country many types of vegetation are found, from the vines of the Medoc to the woods and pastures of the Alps. The wild animals are decreasing owing to the comparative lack of forest land, and bears, wolves, and chamois are found only in the lonely mountainous or wooded regions.

### **Agricultural Products.**

About seven-tenths of the surface is cultivated land divided up into very small farms, and about half the surface is arable land. Nearly half the working

population is engaged in agriculture and the peasant farmers work with great industry. Of the cereals, wheat is the chief grain crop, grown in all parts, but especially north of the Seine. Oats are grown in the north and north-east; rye is the chief grain of the central plateau; maize is grown in the Rhone valley and in the south-west; and buckwheat in the north-east. The vine, however, is the typical cultivated plant, and there are vineyards in all parts, except a strip on the north-west coast and on the central plateau. The chief wine-producing departments are Hérault, Garde and Aude on the Mediterranean, Gironde on the Bay of Biscay, and the Burgundy district. Reims is the centre of the Champagne district. Of late years, owing to the devastation wrought by the phylloxera, there has been a decrease in the production of wine, and a large amount is imported from Spain, Italy, and Algeria. The olive and mulberry trees are cultivated in the south, and the beet-crop of the north is of great value. Colza, hemp, flax, and tobacco are crops of some importance. Cattle are fed on the western plains, and sheep on the poor pastures of the central plateau. Oxen are used in agricultural work, and donkeys and mules are often the beasts of burden in the south.

### **Fisheries.**

Fishing occupies about 130,000 men round the coasts, especially off Normandy and Brittany. Dunkirk and Nantes are the two chief ports, and large vessels visit Newfoundland and Iceland for cod. Oyster culture is of some importance on the sandy Atlantic coast, especially at Arcachon and on the Mediterranean coast. Tunny fishing is carried on around Corsica.

### **Minerals.**

The mineral resources of France are much inferior to those of Britain, and this is most evident in the case of coal, for at least half the quantity used is imported.

The best coal-mines are in the Valenciennes field in the north, and the central coal-fields, including the mines about St Etienne and Le Creusot, come next in importance. Iron is abundant and is generally found near the coal. Lead from the Auvergne Mountains is the only other metal of importance. Good building stone is quarried in Brittany, Normandy, and elsewhere; and there are salt-mines on the west and south, but one-half the supply comes from the salt marshes on the shores of the Bay of Biscay and the Mediterranean. In some parts of France, especially in the regions of extinct volcanoes, there are thermo-mineral springs, some of which are of considerable value and are yearly visited by large numbers of patients.

### **Industries and Manufactures.**

Owing to the deficiency of coal, France is not so favoured as Britain as an industrial nation. The most productive French coal-field has its centre near Valenciennes. The blast-furnaces and steel-works of St Etienne and Le Creusot have immense iron-foundries and engineering establishments. In point of value the most important manufactures are wool and silk, the former carried on chiefly in the north, and the latter in the south. It will be found that the textile industries flourish in the neighbourhood of the coal-fields or near the supply of raw materials. Thus the woollen industry is localised chiefly in the department Nord, and one-third of the whole is done at Roubaix, Tourcoing, and Fourmies. The silk trade is largely carried on near Lyons, which is the greatest silk market in the world. St Etienne has extensive ribbon factories; Rouen is the French Manchester, with the chief cotton mills of France; Lille is the centre of the linen trade; Amiens has velvet factories and makes much cotton. Lace-making is a characteristic French home industry, the chief centres being Alençon, Bayeux, and Calais. Porcelain is made at Limoges and Sèvres, and carpets at Gobelins. There are also sugar works, chemical industries, paper mills,

and industries connected with dress, furniture, and all articles of luxury. In all these industries the French display inventive genius and artistic taste, and Paris is the emporium for these articles.

### Communications.

The French highways are kept in an excellent state, and besides the 24,000 miles of *routes nationales*, there are twice as many miles of *routes départementales* and *chemins vicinaux*. The canal and river system of France is very complete, and is of much more importance than that of England. At least one-third of the inland goods traffic is by means of canals and rivers. The *Canal du Midi*, 150 miles long, runs from Bordeaux to Toulouse and thence to Cette, thus saving a sea-passage of 2000 miles. The Rhone is joined through the Saône by a canal to the Rhine, by another to the Loire, and by a third to the Seine. The canal traffic is heaviest in the north, where there is a network of water-ways. The railway system radiates from Paris, which is seven hours from London by the Calais-Dover passage.

The chief lines are :

1. The *Northern* to Boulogne, Calais, Lille, and other northern towns, with connections to Brussels, Berlin, and Petrograd.

2. The *Western* to Rouen, Havre, Dieppe, Cherbourg, and Brest.

3. The *Paris-Orleans* serves the area between the Loire and the Garonne ; the chief centres are Orleans, Tours, and Poitiers.

4. The *Southern Lines*, of which one runs into Spain by Bayonne, and another by Toulouse to Cette.

5. The *Paris, Lyons, and Mediterranean* has the greatest traffic, with stations at Dijon, Mâcon (the centre for the Mont Cenis tunnel route to Italy), Lyons, and Marseilles.

6. The *Eastern* has one line through Chalons and Nancy leading to Germany, and another goes through Belfort into Alsace and Switzerland, connecting with

Austria by the Arlberg tunnel and with Italy by the St Gothard tunnel.

### Commerce and Trade.

The chief imports of raw textile materials are wool, silk, and cotton, and these, with wine, grain and flour, coal and coke, together make up one-third of the total value. The chief exports comprise woollen, cotton, and silk goods, and after these, leather goods, spirits, sugar, and chemicals are of importance. Great Britain stands first among the customers of France. It receives one-quarter of the exports from France, and sends one-seventh of the imports. Belgium, Germany, and the United States rank next in order. The French mercantile marine carries only one-quarter of the French commerce, and there is a high tariff on imported goods.

### People and History.

In the early days, France was peopled by the Gauls, the dominant race, the Ligurians on the Mediterranean, and the Iberians or Basques in the south-west. These were conquered by the Romans, and after the campaign of Caesar the Gauls adopted the Latin speech and Roman manners and mode of life. In the fourth century, Gaul came under the power of Teutonic invaders, especially the Burgundians, the Visigoths, and the Franks. Clovis the Frank laid the foundations of the future kingdom of France, and later Charlemagne ruled over this country, but his power faded under his successors. Paris became the capital in the tenth century, and the Northmen settled in Normandy. In the succeeding centuries the kings of England were also Dukes of Normandy and were more powerful than the native rulers. English power in France ended in 1451, when only Calais was left to England of all her possessions, and that was finally lost in the reign of Mary. The eighteenth century was a period of rivalry between France and Britain both in the Old World and America, and Napoleon's power was overthrown at Waterloo in

1815. The line of the Bourbons was restored in 1814, and the *coup d'état* of 1852 inaugurated the second empire of Napoleon III, which lasted till the disastrous Franco-German war of 1870–71. Then a Republic was constituted which has since continued to govern the country. The later years of the nineteenth century saw the extension of the French colonial empire, and succeeding years were memorable by reason of the *entente cordiale* with Britain. The Great War of 1914 was closed by an Armistice on November 11, 1918. The Peace of Versailles (June 28, 1919) gave France the provinces of Alsace and Lorraine, and the Rhine once again became the boundary of the French Republic.

There are about 39 million people in France and the density to the square mile is nearly 190. The rural population to the urban is as 22 : 17. There are 15 towns with populations of over 100,000; Paris has  $2\frac{3}{4}$  millions, and Marseilles, the second town, has half a million.

### **The Geographical Advantages of France.**

The geographical advantages of France have enabled it to play a leading part in the history of modern Europe, and next to England she is the most favourably situated of all the European countries. The geographical conditions that give France so many advantages in her rivalry with other European nations may be briefly summarised. (1) The northern coast is washed by the narrow sea which is the greatest highway of the world's commerce. (2) The western coast is open to the Atlantic and the southern coast to the Mediterranean. (3) The harbours on all the coasts are adequate and the rivers are generally navigable. (4) The soil is more fertile than that of most European countries. (5) The mountain frontiers in the south and south-east afford protection on those sides, though they do not entirely impede peaceful intercourse. (6) The compact shape of France tends to the unity of the country. (7) Brittany is the one section that has been separately influenced

by its geography, and as a result it has been remote from the general life of France. There a Celtic language still survives, and the people retain the ideas and traditions of the past.

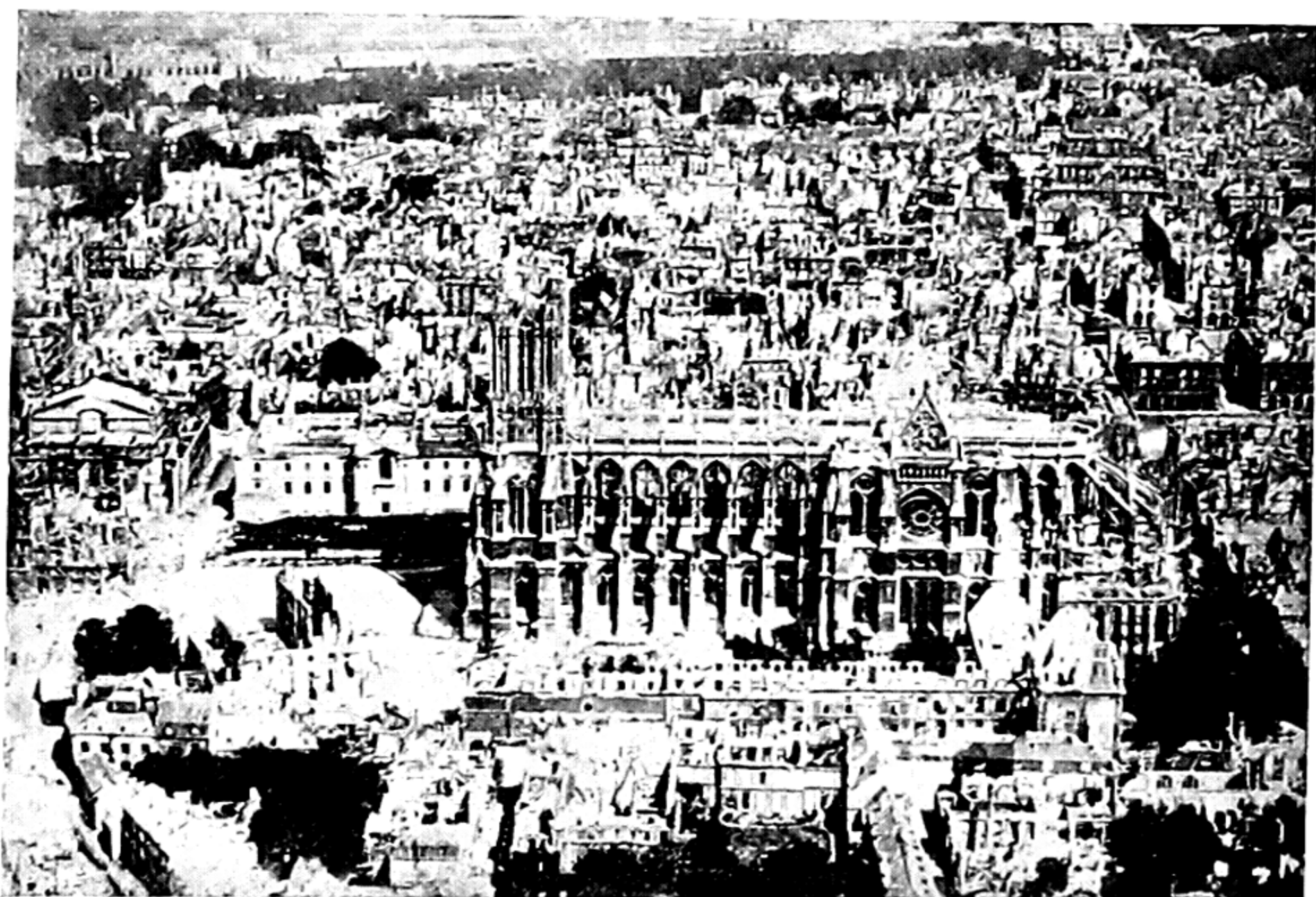
### Administration and Divisions.

France is a republic under a President, who is elected every seven years, and two houses of parliament, the Senate and the Chamber of Deputies, which unitedly form the National Assembly or Congress. For purposes of administration France is divided into 86 departments under prefects, and these are further subdivided into arrondissements under sub-prefects, and communes under mayors. Many of the departments are named after their rivers or mountains, such as Seine-et-Marne, Indre-et-Loire, Basses-Alpes, and Hautes-Pyrénées; and some after the aspect of the country, as the Landes. For purposes of voting there is manhood suffrage. The standing army is the result of conscription, and there is a large navy.

### Towns.

*Paris*, the capital of France, is divided by the Seine into two parts, and is situated in the centre of a rich region. It is the most populous city of France, and ranks after London and New York as one of the world's greatest cities. It is a great industrial and commercial centre, its fine position giving it easy communication with all parts of France, and with England, Belgium, and Germany. Paris is surrounded by fortifications, through which pass the railways which radiate over the country. *Marseilles*, the second city, on the Mediterranean, is the chief harbour, having a large trade with Mediterranean ports and via the Suez Canal with India, China, and Australia. *Havre*, on the Seine, is the second seaport, having a large trade in coffee and cotton with the northern French ports, England, and America. *Bordeaux*, on the Garonne, is the chief wine port of France. *Dunkirk*, *Calais*,

*Boulogne*, and *Dieppe* are seaports that trade with English and North Sea ports. *Lille*, a fortress near Belgium, is an industrial town famous for its machinery, sugar, and chemicals. *Toulouse*, on the Garonne, is well situated between the Atlantic and the Mediterranean. It is the centre of a rich agricultural district and its people are distinguished for their taste in letters and arts. *St Etienne* has grown into importance in



Reims: the Cathedral in July, 1918.

recent years and manufactures machinery, hardware, and silk ribbons. *Lyons*, at the confluence of the Rhone and the Saône, is the chief seat of the silk trade. *Nantes* is a seaport on the Loire, but owing to its sandbanks, *St Nazaire*, nearer the ocean, has taken some of its trade. The two ports are now connected by a ship canal. *Nice*, near the Italian frontier, has a delightful climate and is a famous winter resort. *Rouen*, on the Seine, has considerable trade and its manufacture of cotton

goods is of great importance. *Cherbourg*, at the extremity of the Cotentin peninsula, and *Brest*, at the extreme western end of Brittany, are naval and military towns of the first importance on the Atlantic. *Toulon* is of similar importance on the Mediterranean. *Reims*, formerly the place of coronation of French kings, is renowned for its cathedral, one of the finest extant specimens of Gothic architecture; but owing to the constant bombardment of this city by the Germans during the Great War this cathedral suffered irreparable damage. Besides having large woollen manufactures, Reims is the principal entrepôt for the wines of Champagne. *Strassburg*, in Alsace, on the Ill, but quite close to the Rhine, has breweries and tobacco factories.

## Belgium.

### Position and Extent.

Belgium, one of the smallest European states, is the southern portion of the former kingdom of the Netherlands, and lies between France and Holland, the North Sea and Rhenish Prussia. Its area of 11,373 square miles is about one-third of that of Ireland, and its greatest length from north-west to south-east is 175 miles. As a result of the Great War, Germany was made to cede to Belgium the districts of Eupen, Moresnet, and Malmédy.

### Surface and General Features.

The sea-coast is only about 40 miles in length and the depth of the sea is not more than 30 feet within a distance of five miles from the shore. The surface of Belgium in the south-east is a tableland; this is watered by the Meuse, and the slope of the land is towards the plains in the north and west, where it is flat throughout the provinces of Flanders, Antwerp, and Limburg. The high and picturesque plateau of the Ardennes rises to a height of 2000 feet, but on the southern border the

land is not more than 1000 feet above sea-level. The great navigable rivers, the Scheldt and Meuse, both rise in France, but their mouths are in Holland. Both rivers have numerous tributaries, and there are nearly 600 miles of canals. A district known as the Campine, composed of marshes and heaths, extends along the Dutch frontier; and in Flanders the encroachments of the sea are checked by dykes.

### **Climate and Productions.**

Belgium lies between  $49\frac{1}{2}^{\circ}$  and  $51\frac{1}{2}^{\circ}$  N., and Brussels has the same mean temperature,  $50^{\circ}$  F., as London, which is in latitude  $51\frac{1}{2}^{\circ}$  N. Generally, the climate is cool and equable; the district of the Ardennes has greater extremes, and there the mean temperature is  $45^{\circ}$ . The prevailing winds from the west and south-west explain the fact that rain falls on 195 days in the year. The rainfall in the Ardennes region is higher than elsewhere in Belgium. About three-fourths of Belgium is under cultivation, the principal crops being wheat, rye, and oats; and the less important, beet (especially sugar-beet), buckwheat, and flax. Flax is grown chiefly in the valley of the Lys, the water of which, being free from lime salts, is well suited for cleansing the fibre. About one-sixth of Belgium is forest land, and there is a good area under pasture, especially in the rich meadows of the low provinces. The land is cultivated by the farmers, most of whom are small holders who have gained a high position for the laborious care they have taken in making the most of the soil.

Belgium is rich in minerals, especially coal and zinc. The most productive coal-fields are in the area round Mons, near the French frontier, and round Charleroi in eastern Hainault. The Belgian coal-fields are more difficult to work than the British, for they lie at a greater depth and are not so continuous. Iron ore is obtained from Namur, Liège, and Luxemburg; zinc from Moresnet; lead from Verviers; slate from Luxemburg; and stone from Brabant, Hainault, and Namur.

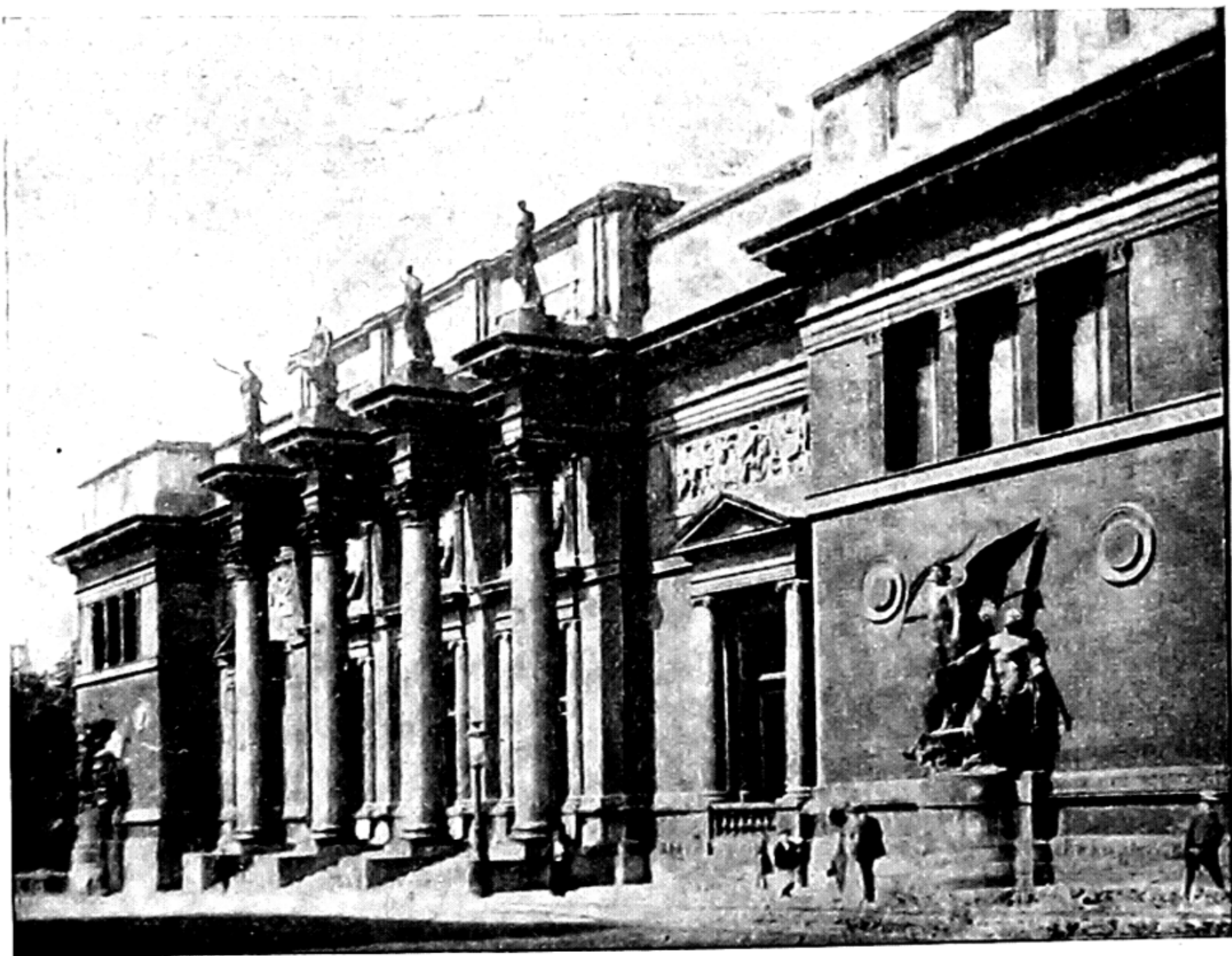
The breeding of horses in Belgium is of great importance; the great Flemish and Brabant breeds and the smaller Ardennes horse are famous.

### People, Industries, and Communications.

Belgium is one of the most densely peopled countries in Europe. Its population of 7,600,000 gives an average of 660 to the square mile. The people are crowded together in the industrial centres, and the Ardennes district has the smallest population. The Belgians are partly of Romanic and partly of Teutonic origin, and speak two languages, Flemish and French, the latter being the official language. This explains the fact that most Belgian towns have a Flemish and a French name. Belgium was for five centuries under the Romans, and then passed under the sway of the Franks, the Burgundians, the Austrians, and the French. In 1815 Belgium and Holland were united, but in 1830 the former became an independent country. Almost all the people are Roman Catholics. The manufactures are of considerable importance, largely owing to the mineral wealth. The linen manufacture at Ghent and Tournai, in the valley of the Lys, has been already mentioned; and the woollen manufacture is carried on chiefly in the north-west, especially at Liège. Machinery is made in the neighbourhood of Liège and Charleroi, fire-arms at Liège, and cutlery and glass on or near the coal-fields. Lace is made at Brussels, Malines, and Bruges. Belgium is a busy and prosperous commercial country, and for its size has the longest and most complete railway system in Europe. The lines of steam-vessels connect Antwerp with most of the commercial countries of the world, and there are daily services between Ostend and Dover, and between Antwerp and Harwich. Its railways bring it into communication with France, Switzerland, and Italy, and with Berlin, Vienna, Petrograd, and Constantinople. Brussels is the centre of the railways, which are mostly state-owned.

Belgium exports iron, machinery, grain, coal, flax,

linen, wool, hides, zinc, glass, and chemicals; and imports wheat, wool, timber, and coffee. The neighbouring countries have the largest share of the foreign trade, but the United States is increasing its trade with Belgium.



Brussels: the Museum of Painting and Sculpture.

### Administration and Towns.

The king is the head of the constitutional monarchy, and the legislative body consists of the Senate and the Chamber of Representatives. The country has nine provinces, which are divided into 41 arrondissements, and then again into communes.

The capital of Belgium is *Brussels*, which has of late years been transformed into a beautiful city, with

broad thoroughfares and fine modern buildings. Its ancient buildings, notably the Hôtel de Ville and the houses of the old guilds, are of great architectural importance. Besides being the residence of the king and the seat of government, Brussels is an intellectual and industrial centre. *Antwerp*, on the Scheldt, 60 miles from the sea, is one of the great commercial seaports of Europe. *Liège* owes its industrial prosperity to the neighbouring coal mines. It is strongly fortified and has manufactures of fire-arms, besides the industries connected with the Royal Arsenal and other engineering works. Its famous siege in August, 1914, was the dramatic opening of the Great War. *Ghent*, at the confluence of the Lys and Scheldt, is a town of considerable historical importance, although it is now mainly an industrial centre. *Ostend*, a seaport in West Flanders, is connected by a canal with the old seaport of *Bruges*, a decayed but glorious city of the Middle Ages.

## Holland.

### Position and Extent.

Holland is the popular name of the country known officially as the Netherlands. This little maritime kingdom of about 12,600 square miles is bounded by the North Sea, Prussia, and Belgium. The area varies from time to time owing to encroachments by the sea and to reclamations from the sea. In 1894 the area of land destroyed by the sea was greater than the provinces of North Brabant and Limburg. Till 1890 Luxemburg was connected with Holland, but it is now an independent Grand Duchy.

### Surface and General Features.

Holland is not only flat but much of it lies below the level of the sea. It is mainly a delta formed by the Rhine, Meuse, and Scheldt, which flow through it into



A Dutch Canal.

A. K. Mann;  
"459" second year  
1951  
Hest.

the North Sea. There is no highland region, and two-fifths of the surface would be flooded by the sea if it were not protected by dunes and dykes. Some of the lower tracts, from five to 15 feet below sea-level, are protected by broad and flat embankments which are used as carriage roads and footpaths. The most characteristic feature of Holland is the network of canals, which are navigable for small craft, help to irrigate the land, and in winter are splendid iceways. Many canals connect the parallel rivers and it is possible to travel on water throughout the whole of Holland. It is worth noting that one of the public departments is the Waterstaat, whose functions are the cutting and maintaining of dykes and canals and the formation of "polders," or nearly water-tight enclosures. The most important canals are the North Sea Canal from Amsterdam to the sea, the North Holland Canal from Amsterdam to Den Helder, and the "New Waterway," which enables ocean steamers to reach Rotterdam at all times.

Holland has no rivers entirely her own, and the larger rivers flow from south-east to north-west, which is the direction of the slope of the country. The Rhine and the Waal have been international waterways since 1869.

The chief features of the western coast are sandbanks, mud flats, embankments, and sand dunes. The inlets, the Zuider Zee and the Dollart Zee, were formed by inroads of the sea in the thirteenth and fourteenth centuries, and there is now a scheme for the reclamation of the former at an estimated cost of £16,000,000.

## Climate and Productions.

The climate of Holland is somewhat like that of eastern England, but as a rule the Dutch summer is hotter and the winter colder. It will be noted that Amsterdam has the same latitude as Yarmouth. The mean annual temperature is 50° F. and the yearly

rainfall is 28 inches. The reclaimed lands are the least healthy parts and there ague is common.

Cattle-rearing and dairy-farming are the chief occupations. The soil of the polder regions is naturally moist and produces rich pasture grasses, so that horses and cattle are numerous, and the cows give abundance of milk. Rye, buckwheat, and potatoes grow on the sandy soils, and elsewhere hops, rape-seed, sugar-beet, tobacco, and wheat are cultivated. There is a small area devoted to orchards, and the culture of Dutch bulbs at and round Haarlem is a characteristic of the country.

### **People, Industries, and Trade.**

The Dutch belong to the Low German branch of the Teutonic race and trace their origin to the Frisians, the Saxons, and the Franks. The country was conquered by the Romans, was under the rule of the dukes of Burgundy, separated from the German Empire, and enjoyed self government under Charles V. After a long war of independence against Spain, Holland was recognised as a free republic in 1648. The seventeenth century was high water mark for Holland as a nation, for then it was that Dutch commerce, science, classical scholarship, literature, and art stood pre-eminent, and it was in the middle of that century when Holland and England were rivals at sea. French armies overran Holland at the time of the French Revolution, and in 1806 Louis Napoleon was made king of Holland. On the fall of Napoleon, Holland and Belgium were united, but Belgium seceded from the union in 1830.

Holland formerly was noted for its manufacturing industry, but the absence of minerals militates against the carrying on of manufactures by machinery, although cotton, linen, and woollen spinning and weaving are pursued to some extent.

At least one-third of the workers are occupied on the land, and, besides the textile workers, others are employed in ship-building, the making of paper and leather, and the preparation of sugar, spirits, and food materials,

## Scandinavia.

### Position and Extent.

Norway and Sweden together form Scandinavia, a great peninsula in the north-west of Europe. Norway, which forms the western and smaller portion, is somewhat larger than the British Isles, and Sweden in the east has an area equal to twice that of Great Britain. The length of the peninsula is 1160 miles and the breadth varies from 230 to 470 miles.



A fjord in Norway.

### Surface and General Features.

The surface of this peninsula may be described as a high tableland varying from about 1000 feet in the north to 3000 feet in the south. Throughout its extent this tableland presents a generally desolate aspect, and the prevailing vegetation consists of heaths, mosses, and lichens. Norway has the largest proportion of

this tableland, as the lowlands of the peninsula are mainly in the east and south. On the western side this high, barren plateau is penetrated by fjords and fringed by numerous islands, including the Lofoten group. To the eastward the plateau sinks in terraces to a plain along the Gulf of Bothnia. The great mountain groups consist of the Kiolen Mountains, and the Hardanger, Sogne, and Dovre Fjelds. Norway is one of the most mountainous countries in Europe, and the highest peak is Galdhøpiggen (8400 feet). Many snowfields and glaciers are formed, especially in the north and towards the west coast, and from Jostedalbrae, the largest of the snowfield districts, no less than 24 glaciers flow.

The broken and indented nature of the coast has already been mentioned, and between the islands there are tremendous currents, such as the famous Maelström, whose force has been much exaggerated. The off-lying islands along the Norwegian coast afford excellent harbours for the fishermen. The Swedish coast is low and sandy, and has the large islands of Gothland and Oland in the Baltic.

### **Rivers and Lakes.**

The rivers are generally so much obstructed by rapids as to be of little use for navigation. It will be seen that the rivers on the eastern side are the longer, and the only important river in Norway is the Glommen. Although the rivers are not of much use for navigation, the lakes in the lowland region of Sweden are of great importance. The four great lakes are Vener, Vetter, Hjelmars, and Mälars; and Vener and Vetter together with a part of the Göta River are all connected by a ship canal, so that there is direct water communication between the opposite coasts of Sweden.

### **Climate and Rainfall.**

Owing to the great range of its latitude there is considerable difference between the temperature of

the north and south, and the west has a milder climate than the east because of the prevailing westerly winds. Sweden is more exposed to continental conditions, but the higher parts of Norway have a very severe climate. The greatest cold is experienced in the northern portion of the interior of Sweden. In Stockholm the average temperature ranges from  $28.5^{\circ}$  F. in January, the coldest month, to  $60.3^{\circ}$  F. in June, the warmest month. The Norwegian coast has the greatest rainfall and there also fog is prevalent in the winter, although there is comparatively little snow. At Dombesten the rainfall is 79 inches and at Christiania 28 inches. Sweden has its highest rainfall on the west coast, and in the vicinity of the Kattegat 35 inches are recorded. Most of Scandinavia is covered with snow in the winter and the seaports of Sweden are then closed with ice.

### **Productions and Industries.**

The chief production is timber, and the manufacture of wood-pulp for paper-making and of lucifer matches are important industries. Sweden grows oats and barley, and makes increasing quantities of butter, but Norway has practically no agriculture. Norway derives much of its riches from the sea, and cod, herrings, and train-oil, a product of the whale-fisheries, are of considerable value. Both countries suffer from a lack of coal, but the iron mines of Dannemora have made Sweden famous for its iron for a long period. Sweden also produces copper, silver, and lead. Cattle-breeding is of some importance in Sweden, and in the north reindeer are reared. The manufactures of Sweden include those connected with iron-works, chemical works, wood-working factories, lucifer-match factories, breweries, and distilleries. In Norway the main resources of the people are the fisheries, the forests, and the shipping. Ship-building has always been an important industry, and the Norwegian mercantile marine is large, for Norway does a great carrying trade for other nations, especially in sailing-ships.

## People and History.

The bulk of the people belong to the Scandinavian branch of the Teutonic race. In the early centuries Norway, Sweden, and Denmark were united, but Norway has formed a separate kingdom since 872 and in the same century Sweden had its own king. Sweden became the most powerful country of the north from 1537 to 1660, especially under the great leadership of Gustavus Adolphus. After many vicissitudes the French Marshal, Bernadotte, became king of Sweden in 1818, and eventually of both kingdoms. This union continued till 1905, when it was decided that Norway should once again have its own king. The Norwegians chose their king from the Danish royal house, while the Swedes retained their old king. The population in both kingdoms is about 8 millions, but Sweden has more than twice as many people as Norway, which has only 18 persons to the square mile. The people, honest, thrifty, and hard-working, are members of the Lutheran church, which was established in the sixteenth century.

## Administration and Communications.

Each country has its own king and two houses of parliament. Sweden is divided into Sveland, Götaland, and Norrland, and Norway into the northern, southern, and western districts. Along the Norwegian coast communication is kept up by steamers all the year, and several lines of steamers run between Norway and Britain. The Norwegian roads are good, and three railway lines join Norway with Sweden. Sweden has a splendid system of roads over the country, and its railway communications have been so much improved that its railway mileage is the greatest in Europe in proportion to the number of its inhabitants.

## Towns in Norway.

Nearly all the Norwegian towns of importance are seaports. *Christiania*, the capital, is on a fjord at the

head of the Skagerrak. It is the chief harbour and the only industrial town. *Stavanger* and *Bergen* are the headquarters of the fisheries, and *Trondhjem* has a good harbour. *Drammen* has trade in logs and wood-pulp, and *Hammerfest*, the most northerly town in Europe, is a centre for whale-fishing.

### In Sweden.

*Stockholm*, the capital, stands at the Baltic entrance of Lake Mälär and is the chief industrial town of the country. It has a fine harbour, and, besides the royal palace, there are many good public buildings. *Upsala* has an ancient cathedral and its university dates from the fifteenth century. *Göteborg*, on the Skagerrak, is the chief port for Swedish exports. *Falun* has great copper works. *Norrköping* is a flourishing industrial centre. *Malmo* and *Helsingborg*, on the Sound, are two progressive seaports.

## Russia.

### Position and Extent.

Russia, which occupies the whole of eastern Europe, has an area of nearly two million square miles, or more than half that of the entire continent.

### Surface and General Features.

The greater portion of the surface consists of a vast plain 700 miles wide, which crosses it from south-west to north-east and connects the elevated plains of central Europe with the Urals. The Valdai Hills rise to 1100 feet, and the Urals, which consist of parallel ridges running south-west to north-east, have summits upwards of 5000 feet high. The Caucasus Mountains in the south are of great importance and have the highest peaks in Europe, Mount Elbruz reaching 18,256 feet.

The rivers of Russia are numerous and long, the

majority of them being navigable nearly to their sources. and many of them for a great distance by steamers. Of course they are all more or less subject to the drawback of ice, for no Russian river port is open for more than 10 months in the year. The chief rivers rise in the north-west of the plateau; some of them flow north-west while the others go south-east. There are about 50,000 miles of navigable rivers in Russia and about 500 miles of canal, but the system of the Neva and the Volga carries two-thirds of the European trade. It includes Lakes Ladoga and Onega with access to the Baltic Sea, the river Dwina entering the White Sea, and the Volga, 2200 miles long, with its lengthy tributaries flowing to the Caspian. At Tsaritsin the Volga approaches within 50 miles the Don, to which barges are transferred by railway and floated down to the Baltic Sea. Another system links the Baltic through the Vistula and Dnieper with the Black Sea and Mediterranean.

### **Climate and Rainfall.**

With the exception of the Baltic provinces, the south of the Crimea, and a tract along the Black Sea, the climate is continental. The winters are generally long and cold; the summers are short and hot. All over Russia the winter temperature of January is below freezing-point, varying from 22° F. in the west to 5° in the east. All the rivers are frozen over in December, and they remain under ice for about 100 days in the south and 160 days in the north. In summer the Russian temperature is high and reaches 78° at Astrakhan. The rainfall all over Russia is generally small, and about half the entire area in the north-east, east, and south-east has a yearly rainfall of less than 20 inches.

### **Productions.**

It is estimated that not more than one-quarter of the surface of Russia is arable, and from the preceding

paragraph it will be gathered that the climate in the north and south-east puts a limit to cultivation in these regions. In the north the tundra region has mosses, lichens, and shrubs. This is succeeded by the forest region of coniferous and deciduous trees. The "steppes" are immense plains covered with grass and devoid of trees. The "black earth region," in southern Russia, has a fertile soil and grows the greatest quantity of the Russian corn crops. The chief of the grain crops is, however, rye, which is grown to an amount four times as great as wheat. Oats are largely produced; and flax and hemp in the Baltic provinces and Poland, and sugar beet in the south, are important crops. The Russian forests, the largest wooded area in Europe, are under government control. Horses, cattle, and sheep are pastured on the steppes in spring and autumn. The woods abound with fur-bearing animals, such as the squirrel, and the great rivers swarm with fish.

### Minerals.

The mineral wealth of Russia is enormous and both coal and iron are abundant. Coal is found near the Sea of Azov, in the valley of the Donetz, a district which yields the largest and best supply. The Ural Mountains, the great mineral region, yield coal, iron, gold, zinc, silver, and platinum. There are rock-salt mines in several places, and salt works among the saline lakes of the steppes. The western shore of the Caspian has some very productive petroleum wells, particularly at Baku.

### Industries, Trade, and Commerce.

Agriculture is the chief occupation of the Russians, and only in parts of central Russia does manufacturing industry rank in importance. The chief industrial centres are Moscow and Petrograd. The woollen trade is growing in the south, and the production of alcohol, especially *vodka*, the national spirit, is enormous. There are numerous sugar mills and tallow factories in Russia;

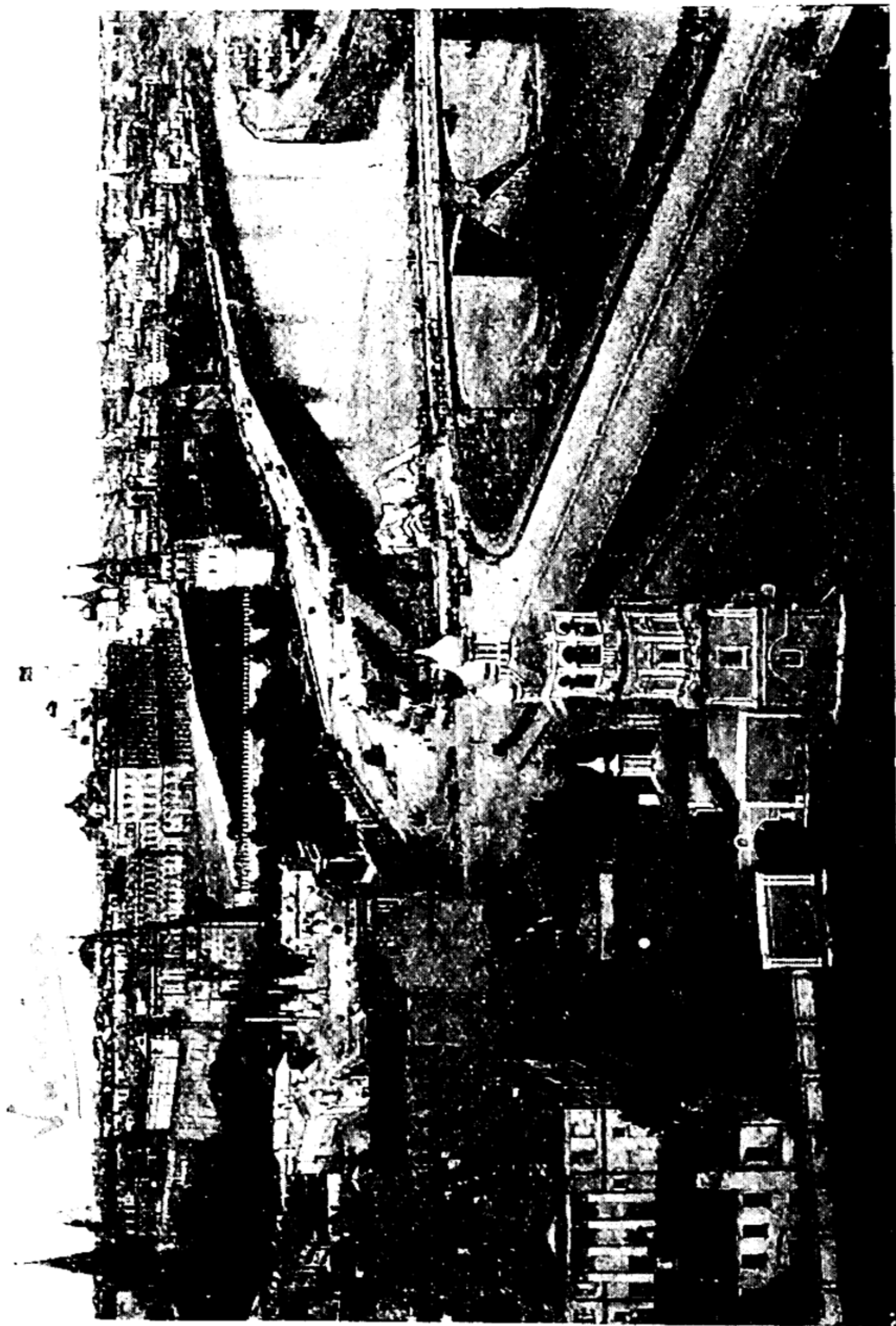
but the domestic industries carried on in the homes of the peasants are of greater importance than elsewhere in Europe. The trade of Russia is mainly with Germany and Great Britain. The exports are chiefly wheat from the Black Sea, oats and rye from the Baltic ports, timber, flax, hemp, cattle and their products, and petroleum. The chief imports are raw materials for the increasing manufactures, coal, tea, and manufactured articles. The importance of the Russian rivers in the trade has already been mentioned, and the railways, radiating from Moscow, extend to 35,000 miles. The Siberian railway to Vladivostok on the Pacific was completed in 1904.

### **People and History.**

The population of Russia, which is rapidly increasing, is about 131,000,000. There is a great variety of nationalities, but the majority of the people are Russian Slavs. Jews are numerous in west Russia and there are Armenians, Kurds, and Persians in the Caucasus. Besides these there are Tartars and Kalmucks in the Caucasus, and many Germans in the Baltic provinces and the chief towns.

Most of the people belong to the Greek Church, officially styled the Orthodox Catholic Church.

In the Middle Ages, the country suffered from the Mongol invasion, and it was not till Ivan the Great (1462–1505) had expelled these terrible invaders that Russia began to develop. Then it was that Moscow became the capital of an important state which was soon to reach from the White Sea to the Black Sea. Under Peter the Great (1689–1725) Russia became dominant on the Baltic, and under Catherine II great additions were made to Russia at the expense of Poland, Turkey, and Sweden. In the nineteenth century Russian extensions of territory were made in Asia, but the defeat in 1904–5 of Russia by Japan, both on land and sea, put a limit to Russian aggression for a time.



Moscow.

## Administration.

Russia took part in the Great War of 1914-18 with Britain and France as her allies. In 1917, owing to a revolution, the Emperor Nicholas II abdicated. Poland and Finland in the same year secured their independence as sovereign states, and later, various other districts have become republics, viz. Georgia, Latvia, Lithuania, Ukraine, Esthonia.

The greater part of the former Russian Empire is now a republic under the rule of the Bolsheviki.

## Towns.

*Petrograd* (formerly St Petersburg), the capital, has been accessible to large ships only since 1885; before that date Kronstadt was its port. It has wide streets and splendid buildings, and is the great centre of trade and industry. *Moscow*, the former capital and still in some respects the chief city, is the chief railway centre, the first manufacturing town for textiles, metal work and paper, and the centre of inland trade. *Kieff*, on the Dnieper, has important fairs and beet-sugar works. *Kharkoff*, on the northern border of the steppes and in the heart of the black earth region, has a large horse trade. *Kazan* and *Saratov*, on the Volga, with tobacco and salt works, have a large shipping trade. *Nizhni-Novgorod*, at the confluence of the Oka and Volga, has great annual fairs visited by tens of thousands of merchants with goods brought from all parts of Europe and Asia. *Reval* and *Riga*, ports on the Baltic, trade largely in oats, rye, wood, hemp, flax, and tallow. *Odessa*, the busiest port on the Black Sea, is the chief grain port of Russia and the seat of the Russian Steam Navigation Company. The other sea-ports on the Black Sea or the Sea of Azov are *Taganrog*, *Kherson*, and *Nicolaeff*. *Sebastopol*, in the Crimea, is now a naval port and closed to trade. *Archangel*, on the White Sea, exports flax, timber, tar, and tallow.

*Astrakhan*, on the Caspian Sea, has sturgeon fisheries, and trades with *Baku*, the great oil town.

## Finland.

### Position, Area, and Surface.

Finland is situated between the Gulf of Bothnia on the west and Russia on the east, and between Lapland on the north and the Gulf of Finland on the south. Its area is 125,689 square miles, and of this area about 11 per cent. is under lakes.

### Productions and Industry.

Agriculture is the chief occupation of the people, although only one-twelfth of the land is under cultivation. The chief crops are rye, barley, oats, potatoes, flax, hemp, and hay. The production of butter is an important industry. The domestic animals are horses, horned cattle, sheep, and pigs.

More than half Finland is covered with forests of pine and spruce, and lumbering is the chief industry. Iron, copper, and sulphur are found, but not in large quantities. The chief manufactures are those connected with iron, textiles, wool, paper, leather, chemicals, and brewing.

### Trade and Commerce.

The foreign trade is chiefly with Russia, Sweden, Norway, Denmark, Germany, and Great Britain. The principal exports are paper, timber, butter, iron and iron goods, textiles, leather, and hides: the chief imports are cereals, coffee, sugar, fish, cotton, and machinery.

For internal communication Finland has a remarkable system of lakes, which are connected with each other and with the Gulf of Finland by canals.

## People and History.

The population is about  $3\frac{1}{2}$  millions, and the chief religions are Lutheran, Greek Church, and Roman Catholic.

Finland was joined to the Russian Empire as a Grand Duchy in 1809; in 1917 it declared itself an independent and Sovereign State; and in 1919 it became a Republic.

## Towns.

*Helsingfors* is the capital and largest town. It is a busy seaport and its university is an important scientific centre. *Abo* is the most ancient town in Finland. Its chief trade is in timber and grain. *Viborg* is the most frequented harbour of Finland and ranks second in the value of its trade.

# Austria and Hungary.

## Position and Extent.

Austria and Hungary are two states in the middle of Europe. The area is over 60,000 square miles. As a result of the Great War these two countries were reduced from their previous area of 240,000 square miles, and various portions were annexed to Czechoslovakia, Rumania, Yugo-Slavia, and Italy.

## Surface and General Character.

The greater part of this geographical territory is mountainous or hilly. The great mountain chains are the Alps and the Karpathians. The Alps, stretching from Switzerland to the Danube, have the highest peaks in Austria—Ortler Spitze (12,814 feet) and Gross Glockner (12,400 feet). The Karpathians, sweeping in a semicircular form, culminate in peaks 8000 to 8500 feet.

The larger portions of Austria and Hungary belong to the middle basin of the Danube, which is navigable for

steamers throughout its whole course in these countries. Navigation, formerly impeded by the rapids at the Iron Gate, was rendered free in 1896, when a permanent channel, 10 feet in depth, was completed. The chief affluents of the Danube are the Inn, Save, Drave, March, Waag, and Theiss. The last river drains nearly half of Hungary. The other rivers are the Vistula, Elbe, and Dniester.

There are some beautiful lakes in Tirol, but the largest lakes are in Hungary—notably Balaton and Neusiedler See. Zirknitz Lake is in Illyria.

### **Climate.**

Owing to its land-locked position, the country has a climate which is generally continental, but on account of its extent and the variety of its surface there are considerable variations. Throughout the country the summers are hot and the winters very cold. The rainfall is low over the Hungarian plain, ranging from 20 to 25 inches, and is heaviest in Tirol and around the Karpathians and the Alps, where it reaches 40 to 50 inches. In Hungary the *Fata Morgana*, a mirage which rises about noon and spreads over the heated plain as far as one can see, is sometimes visible in the summer. The Alpine provinces have the *föhn*, a prevalent warm south wind.

### **Productions and Resources.**

The extensive forests yield large supplies of timber, and agriculture employs two-thirds of the people. Wheat is largely raised, especially in Hungary, but oats, barley, maize, and rye also are widely grown. Sugar-beet is grown in Austria and Hungary, which are also famous for hops. Vine culture is carried on, and some of the wines, such as Tokay and Karlowitz, are of European renown. Tobacco, flax, and hemp are other products that occupy considerable areas.

Austria is rich in minerals. There are gold and silver mines in Hungary, and quicksilver is obtained

from Idria in Carniola. Coal and iron are both plentiful, but they are found wide apart, so that the yield of the latter is not so great as it might be. Some copper, zinc, and lead are also produced.

### **Industries, Trade, and Commerce.**

Agriculture is the main occupation of both countries; but mining gives employment to large numbers. Piano-making and the manufacture of motor-cars and textiles are of much importance in Austria.

By far the larger part of the trade before the Great War was done by rail with Germany, and the next best markets were Rumania, Russia, Italy, and Serbia. The trade with Great Britain was relatively small. The chief exports were grain, sugar, eggs, timber, minerals, and glass-ware, and the imports included raw wool, cotton, coal and coke, tobacco, leather, silk, and coffee.

Vienna is the centre whence trade routes and railways radiate. The chief Austrian tunnels through the Alps are the Brenner, Semmering, and Arlberg. The Brenner tunnel serves as the direct route between Bohemia and Italy; the Arlberg tunnel is the shortest route between Vienna and Switzerland; and the Semmering tunnel is the shortest route between Italy and Vienna.

### **People and History.**

The population is about 20 million, there being 6 million in Austria and 14 million in Hungary. This population is very unevenly distributed, being generally sparse in the Alpine and Karpathian districts and populous in the south-west and north-west. With the exception of Russia, Austria has more distinct races than any other European country. The Slavs are the most numerous and form about 40 per cent. of the whole population. The Germans number about 25 per cent., and there are representatives of the Romance peoples, Italians, Rumanians, and others. The Magyars, who live chiefly in Hungary, form 16 per cent. of the population. The remainder comprise Jews, Armenians, and

gipsies. The chief languages spoken are German, Hungarian, and Polish; and the bulk of the people are Roman Catholics, but there are many belonging to the Greek Church, besides Armenians, Lutherans, and Jews.

The history of Austria is of deep interest. The Romans pushed their empire to the south-west of this country but not much beyond the Danube. In the ninth century Charlemagne extended his empire as far east as Austria, and the name *Oestervick* first appears in 896. After coming into the possession of the House of Hapsburg it rose to be a powerful state in the thirteenth century, and the princes of that family extended their dominion by the inclusion of Bohemia, Hungary, and other states; so that down to the nineteenth century they held the throne of the Holy Roman Empire or German Empire. After the Austro-Prussian war of 1866 Austria was separated from Germany, and in the following year Austria-Hungary was re-constituted on a dual basis. In 1878 Bosnia and Herzegovina were occupied, and in 1908 they were annexed to the Empire.

### Administration.

On October 31, 1918, Hungary declared itself independent of Austria and in the following month was proclaimed an independent Republic. Austria was proclaimed a Republic on November 12, 1918.

### Towns.

*Vienna*, the capital of Austria, with 2,000,000 people, owes much of its importance to its position, for it is situated where all the western trade of Hungary converges on the narrower part of the Danube valley. It has a famous exchange, and great cotton, silk, and woollen factories, besides breweries and an extensive wine trade. *Budapest*, a double town, the capital of Hungary, has a central position on a plain and is thus well placed for trade, especially in grain, cattle, and wine. *Gratz* is the centre of the Styrian iron trade.

## Poland.

### Position, Area, and Surface.

Poland is an inland state having Germany on the west, Russia on the east, and Czecho-Slovakia on the south. The surface is generally flat and uninteresting, and the country is watered by the river Vistula. The area is approximately 300,000 square miles.

### Productions and Industry.

About 85 per cent. of Poland is productive, and of this area about one-quarter is forest. The remainder is arable, meadow, and pasture. The chief crops are wheat, rye, barley, oats, potatoes, and beetroot. The domestic animals are horses, cattle, sheep, and swine.

The most important industries are those connected with textiles, food, metals, and mines. Before the Great War there were extensive sugar refineries and distilleries. The chief minerals are coal, iron, zinc, lead, salt, and rock-oil. It is said that Galicia produces 5 per cent. of the total petroleum of the world.

### Trade and Commerce.

The exports were chiefly manufactured goods, furniture, woollen and cotton goods, and alcoholic beverages which went to Russia; and the imports were raw wool and cotton, jute, cutlery, tools, and machinery. Since the Great War this State is quickly recovering and has 7295 miles of railway open for traffic, while there are 1875 miles of navigable waterways.

### People and History.

Until the end of the eighteenth century Poland was an independent state, and in the fifteenth century it was one of the most highly civilised nations in Europe. In the seventeenth century Poland declined, and in

1772, 1793, and 1795 it was divided among Prussia, Russia, and Austria. In 1807 Napoleon formed it into a State under the title of the Duchy of Warsaw, but in 1815 this was altered and Poland was re-partitioned as before.

During the Great War the country was invaded by Germany and suffered all the horrors of that conflict. In 1918 Poland declared its independence, which was acknowledged at Versailles in 1919.



Warsaw.

The population is estimated at 30,000,000, or a density of 201 per square mile. The great majority of the people profess the Roman Catholic faith, but there is no State Church in Poland.

### Towns.

*Warsaw* is the capital and the point of convergence of commercial routes from all parts of Russia and Western Europe. It has the ancient palace of the Kings

of Poland, and a university. *Lodz* is the second city in population and industry. *Krakow* was once the capital of Poland; it has considerable trade and is one of the chief centres of Polish life. *Lwow* (Lemberg), the third Polish town in point of population, is the seat of a university.

## Czecho-Slovakia.

### Position, Size, and Surface.

This inland country is between Germany and Poland on the north and Austria and Hungary on the south. The area is estimated at 56,000 square miles. This State consists of Bohemia, Moravia, Silesia, Slovakia, and Ruthenia, and some smaller territories assigned to it by the Peace Conference of 1919. Bohemia is in the upper Elbe basin and has mountains on three sides: on the south-west the Bohemian forest, which rises to nearly 5000 feet; on the north-west the Erzgebirge, which has heights of over 4000 feet; and in the north-east the Riesengebirge, which rises to 5300 feet. The south-east of Bohemia is without a distinct range of mountains, and the interior is hilly in the south and a level lowland in the north. Moravia and Silesia stretch over the lowlands bordering the western chains of the Karpathians. The south is drained by the March to the Danube and the north by the Oder to the Baltic Sea.

### Climate.

In the lowlands of the interior the climate is pleasant—the summer is warm and the winter not too cold. In the south the climate is more severe, especially on the surrounding mountains. The rainfall is moderate, and a good deal of snow falls in the winter.

### Productions and Industry.

Bohemia is very productive. Wheat, beetroot, vine, and hops are extensively grown, besides rye, oats, and

potatoes in the hilly regions. Extensive forests cover the mountains of the interior and of the border land. The mineral wealth of Bohemia now consists in its coal, for most of its mines of precious metals are exhausted. Lignite is found in large quantities; there are iron mines in the middle; and the quartz of the sandstone mountains is the source of the glass manufacture of Bohemia.

In Silesia and Moravia barley and beetroot are largely grown and the vine is cultivated. The Karpathians are extensively wooded. The Siberian coal-field causes the iron industry in its neighbourhood to flourish.

In Bohemia there are cotton and woollen manufactures; paper is made from the wood of the forest district; sugar is extensively produced from the beetroot; and beer is brewed at Pilsen.

## People and History.

The population is about 14 millions and consists of Czechs, Slovaks, Magyars, and Germans. Bohemia is densely populated, having above 315 to the square mile, and in the industrial centres of Moravia and Silesia the density is equally great. The majority of the people are Roman Catholics, but there are many belonging to the Greek Church, besides a large number of Protestants and Jews.

The Czecho-Slovak State came into existence in 1918, and the National Assembly, which met at Prague, took over the government of the Czecho-Slovak countries which had formerly belonged to Austria-Hungary, and declared the new state to be a Republic.

## Towns.

*Prague*, the capital, on both sides of the Moldau, has a population of over 600,000. It has considerable trade, largely owing to its position. *Brno*, in Moravia, has woollen manufactures. *Olmütz* was the former capital of Moravia. *Troppau* is the capital of Silesia.

## Rumania.

### Position and Extent.

Rumania is a kingdom lying in the lower basin of the Danube and bounded by Russia, Hungary, the Black Sea, and Bulgaria. It consists of the two old principalities of Moldavia and Walachia, and of Bessarabia, Bukovina, Transylvania, and three smaller divisions. The entire area is 122,282 square miles.

### Surface, Climate, and Productions.

Rumania has been described as an irregular inclined plain, sloping down from the Karpathians (3000 to 9000 feet high) to the northern bank of the Danube. The country is traversed by numerous water-courses, some of which are dry in summer. The mouth of the Danube is divided into numerous branches, of which the most important are those of Kilia, Sulina, and St George. On the lower Danube great improvements have been effected in recent years, and the Sulina mouth has been straightened and deepened, so that large vessels can ascend to Braila. The navigation of the Danube is free to foreign vessels of any nationality by international treaty.

The climate of Rumania is similar to that of the Russian steppes, having hot summers and cold winters. The rainfall is nowhere heavy, and the mean temperature for the year at Bukharest is 51° F.

South-eastern Walachia and the Dobruja are mainly pastoral districts. The Rumanian plain is very fertile, and wheat and all kinds of grain are grown in abundance. Agriculture is the one great industry, and grain forms the bulk of the exports. The Karpathians are well wooded and there cattle-rearing and forestry are of importance, while on the lower slopes there is much cultivation of fruit.

## People, History, and Industries.

The population of about 17 millions is largely composed of Orthodox Greek Christians, but there are many Roman Catholics, Protestants, and Jews. The Rumanians are descended from the original inhabitants, the Dacians, who came under the Roman rule—hence the name of the country. Out of several small states, Moldavia and Walachia became dominant, but they eventually came under the yoke of Turkey. Owing to Russian influence, and as a result of the Berlin Treaty of 1878, Rumania obtained its independence, giving Bessarabia to Russia in return for the Dobruja. In 1881 it was declared a hereditary kingdom with two houses of parliament. As a result of the Great War, Rumania was much enlarged.

The industries include flour- and saw-milling, match-making, brewing, distilling, tanning, and leather-work. The peasants have home industries, spinning, weaving, and dyeing fabrics for their own garments. As already mentioned, the people live mainly by agriculture, but there are industries connected with salt-mining and the extraction of petroleum, which is largely exported.

## Towns.

*Bukharest*, originally the chief town of Walachia, is now the capital of the kingdom. It is the intellectual centre of Rumania and has a very large trade. *Jassy*, near the Pruth, is the provincial capital of Moldavia. *Galatz* and *Braila* are the principal commercial towns on the lower Danube and export grain chiefly in British ships.

## The Balkan Peninsula.

### Position and Extent.

The Balkan Peninsula comprises the greater portion of the region to the south of the Danube. Including the adjacent islands, Crete, the Ionian Islands, and the Aegean Islands, the area of the various states—Euro-

pean Turkey, Greece, Bulgaria, Serbia, Albania, and Montenegro—is about 150,000 square miles. The long and narrow Dardanelles and the Bosphorus separate it from Asia, and the wider Strait of Otranto from Italy. It will be noted that the Balkan is the most easterly of the three peninsulas stretching south from the European mainland, and that it terminates in Cape Matapan.

### **Surface and General Features.**

The Balkan Peninsula is rugged and mountainous; it is penetrated from the north by the Balkan range and the Dinaric Alps, the former in the north-east and the latter in the west. The Balkan range is a continuation of the Karpathians and in parts rises to 7800 feet. The Dinaric Mountains, a continuation of the Alps, consist of parallel chains running parallel to the coast through Montenegro and Albania into Greece, and rising to 6500 feet. What is known as the Thraco-Macedonian region extends between the two mountain ranges and forms the nucleus of the peninsula. The mountainous Rhodope district reaches a height of nearly 10,000 feet; Shardagh, in Upper Macedonia, is the highest peak in the peninsula, being just over 10,000 feet above sea level.

The river valleys of the Morava, Vardar, and Maritza are narrow but very fertile, and have long been the centres of cultivation and the main lines of communication. The Danube is an international highway from its mouth in the Black Sea for more than 500 miles westward. It is under the control of a commission and is kept open for ocean-going steamers by engineering works at the Sulina mouth, the other two outlets not being accessible to large ships. As a rule, the river is closed to sea trade by ice for the first two months of the year.

### **Climate and Productions.**

The peninsular character of this region and its southerly latitude are counterbalanced by the easterly

position, which renders the climate one of extremes. This is more particularly the case in the north, where it is continental, but to the south it is warmer and of the Mediterranean type. The rainfall is heaviest on the western side of the peninsula, and is less on the east coast than in the interior. The rainfall on the Adriatic shores is heavy throughout the year, but especially in autumn.

Among the wild animals, the wolf and the bear are found on the mountains, the jackal on the southern plains, and buffaloes and oriental fat-tailed sheep are common. Along the west coast there is the typical Mediterranean vegetation such as evergreen shrubs, olives, figs, oranges, and lemons; this is poorly developed in the south and lacking in the interior, while in the east there are steppes. The chief commercial products of the peninsula are nearly all agricultural; cereals are grown in Bulgaria, Eastern Rumelia, and Turkey; currants in Greece; and wine, tobacco, and silk are produced almost everywhere. Orchards abound in Serbia, and dried plums (prunes) are largely exported. The cultivation of roses is noteworthy, as this pursuit is for the sake of producing attar of roses, a valuable perfume.

The Balkan Peninsula is rich in minerals, but owing to the apathy of the people and the defective communication these are very meagrely developed. Greece is the only country where mineral products are largely exported. Silver, lead, iron ore, and the statuary marble of the island of Paros form about one-fifth of the value of the exports of Greece. Serbia produces silver, lead, copper, and coal, and the Rhodope Mountains yield copper. Salt is obtained on the shores of the Adriatic and the Aegean.

### Communications and Industries.

As before noted, the Danube is the line of communication in the north; the other rivers are of little importance for trade, and the rugged character of the

surface hinders the construction of roads and railways. In recent years, railways from Belgrade along the Varada, Morava, and Maritza valleys have been constructed, and in 1879 a carriage road was made over the Balkans at the Shipka Pass (4000 feet).

The Isthmus of Corinth has been pierced by a ship-canal, 26 feet deep, which enables vessels not only to save time, but also to avoid the dangerous voyage through the rocky waters in the vicinity of Cerigo.

Agriculture, on the plains and in the valleys, and rearing live-stock are the chief industries. The manufactures are almost entirely of local importance; the making of carpets, chiefly at Adrianople and Salonika, is the only branch of manufacturing industry that gives an export of any value. The Greeks have always been famous sailors and they do most of the trade of the peninsula. The chief countries having trade with the Balkan Peninsula are the United Kingdom, Italy, and France.

### **People and History.**

The Balkan Peninsula was originally occupied by the Thracians, the Illyrians, and the Macedonians. The Greeks spread over the south-east of the peninsula, and later, under Roman and Byzantine rule, the whole region flourished. Constantinople, the capital of the eastern Roman Empire, was the most famous city in the world for trade and industry. The Slavs, consisting mainly of Serbians in the west and Bulgarians in the east, drove back the Greeks, Romans, and Illyrians to the south and south-west. The Slavs became Christians in the ninth century, but their supremacy was terminated by the invasion of the Turks in 1453 when the Byzantine Empire fell. The heavy yoke of the Turks put an end to the prosperity of the Peninsula till the latter part of the nineteenth century, when the Turko-Russian War in 1878 was followed by the Treaty of Berlin and the Balkan Peninsula was divided into five states—Turkey, Bulgaria, Serbia,

Montenegro, and Bosnia and Herzegovina. The latter were eventually annexed to Austria in 1908, and, as a result of the war between Turkey and the other Balkan States in 1912-13, the Turkish territory was reduced to a small area lying east of a line drawn from Enos on the Aegean Sea to Midia on the Black Sea. As a result of the Great War, Turkish territory was further reduced, and Serbia was enlarged by additions from Austria-Hungary and Bulgaria. The latter state was also deprived of its Aegean littoral.

### **The Geographical Character of Greece.**

The land now called Greece by us has always been known to its own people as Hellas. It is a land of islands and peninsulas, and so it was the first part of Europe to stand forth as great and free in the history of the world; for it must be remembered that, in early times, it was always the sea coast which was first civilised, because it was the part which could most easily have trade with other parts of the world. As Greece was the first part of Europe to become civilised, so its coasts and islands were earlier and more highly civilised than the inland parts, which are almost everywhere full of mountains and valleys. Each valley or island or little peninsula had its own town, with its own little territory, forming a separate government and having the right of making war and peace, just as if it had been a great kingdom. Thus it was that the geographical nature of the land settled the history of the Greek people, and Greek merchants and sailors spread the culture of their people by founding colonies in every part of the world then known. The change of trade-routes, the inroads of barbaric tribes, and the tyranny of the Turks brought about the ruin of the land. The present kingdom of Greece is due to the war of independence from 1821 to 1829. The Ionian Islands were ceded by Great Britain in 1864, and the Treaty of Berlin extended its territory to the north. As a result of the war with Turkey in 1912-13, Greece received a further

accession of territory on the mainland and by the cession of Crete, and at the end of the Great War Thrace was ceded to Greece by Bulgaria.

### Towns.

*Constantinople*, on the Golden Horn, commands the Bosphorus, the narrow outlet of the Black Sea into the Sea of Marmora. It is the centre of the Turkish Empire and a commercial city with a large foreign population in the suburbs of Pera and Galata. *Salonika*, on the Aegean, is an outlet for the silk-growing villages of the west and is in railway communication with western Europe. *Adrianople*, on the Maritza, has carpet factories and distilleries of attar of roses. It is a place of great military importance. *Gallipoli*, at the inner end of the Dardanelles is a naval port. *Athens*, on the Gulf of Aegina, is the capital of Greece. It is the only large town, and has *Piraeus* for its port. *Patras*, on the Gulf of Corinth is joined by a railway to Athens. *Belgrade*, the capital of Serbia, is at the junction of the Save and Danube and exports grain down the Danube. *Sofia*, the capital of Bulgaria, is at an important meeting-place of roads. It is an ancient town, but has been completely rebuilt. *Rustchuk*, *Vidin*, *Silistria*, and *Plevna* have all played an important part in the military history of the Balkan Peninsula. *Cettinje*, the capital of Montenegro, is a mere village. *Durazzo* is the capital of the recently formed state of Albania.

## Switzerland.

### Position and Extent.

Switzerland is situated in the middle of Europe between France, Germany, Austria, and Italy. It is entirely inland, with an area of 15,976 square miles. The greatest length from east to west is 216 miles, and the width 137 miles.

## Surface and General Features.

From a geological point of view there are four parallel zones extending across the country from south-west to north-east. In the north-west is a limestone



A mountain pass in Switzerland.

region consisting of the Jura Mountains, about 3000 feet high. This is succeeded by the Swiss Plateau, composed of sandstone and ranging from 1000 to 3000 feet in height. The rest of Switzerland is occupied by two Alpine regions, one in the north being of limestone,

and the other, in the middle, formed of crystalline rocks. The Alpine system may be considered under several groups of mountains. The Alpes Vandoises and the Bernese Oberland have more than 20 peaks rising above 12,000 feet, including the Jungfrau and the Wetterhorn, and the longest of all the Swiss glaciers, the Aletsch glacier, 16 miles in length. The other Alpine groups are the Alps of Unterwald with Pilatus (7000 feet), the Alps of Glarus and Schwyz with the Rigi (5906 feet), and the Pennine Alps with Monte Rosa (15,217 feet), the Matterhorn (14,705 feet), and 30 other peaks above 12,000 feet. The other groups may be simply mentioned by name—the Alps of Ticino, the Alps of Grisons, the Bern Alps, and the Jura. The snow-line varies from 9250 feet to 9020 feet, and of upwards of 500 glaciers the canton of Valais claims the largest number.

### **Rivers and Lakes.**

Switzerland is watered by numerous streams which form the head-waters of important rivers—the Rhine, Rhone, Ticino, and Inn. Some of the tributaries of the Rhine come from the St Bernardin and Splügen Passes, and Lake Constance forms part of its course; but the Aar, its chief Swiss feeder, comes from the Grimsel Pass, flows through the lakes of Brienz and Thun, and drains north Switzerland to the Rhine. The Rhone cuts its way through the Alps to the Furca Pass, and leaves Switzerland after flowing through the Lake of Geneva, the largest of the Swiss lakes. The Ticino flows through Lake Maggiore to the Adriatic, and the Inn to the Danube.

### **Climate and Natural Productions.**

In this country, where the height above sea-level is from 640 feet to the limit of perpetual snow, there is necessarily great variation in the climate. The mean temperature at Bellinzona is 54° F. and at Theodule Pass 20°. The normal temperature diminishes by 3°

for each 1000 feet of elevation. Great extremes of temperature are caused by strong insolation in the day, and considerable variation at night owing to the pure and rare air of the heights. There is much cloudiness, and in the valleys considerable fog. Rain comes with the westerly and southerly winds and some of the windward slopes get 60 inches of rain or even more. Geneva has less than 33 inches. Though not generally favourable to agriculture, the Swiss climate is particularly invigorating and hence draws many visitors who are in search of health.

No less than one-third of the country is classed as unproductive, and only a small portion of the remainder is capable of cultivation. More than one-half of the arable land is devoted to cereals. Tobacco is grown and the vine is cultivated. Dairy products, such as cheese and condensed milk, are of great importance.

### **People, History, and Industries.**

The lake-dwellers of Switzerland were its first inhabitants, but the Helvetians, a Celtic race, were its earliest dwellers in historic times. These people were conquered by the Romans under Julius Caesar, and subsequently the country became part of the German Empire in the eleventh century. The Swiss successfully resisted an attempt by Austria to assert its power over the country; and the present confederacy of 22 cantons dates from 1350, when a confederation of eight cantons was formed. The neutrality of Switzerland is guaranteed by the European powers. The population of  $3\frac{3}{4}$  millions gives a density of about 235 to the square mile. The language varies in different parts. German is the prevailing language, but French and Italian are spoken in the parts adjacent to France and Italy.

Cattle-rearing employs many of the Swiss, and silk and cotton textiles, clocks, and watches are the chief manufactures. The industrial region is in the north, and lies on the great routes by the St Gothard tunnel and Geneva. The centres of the textile industries are

Zurich, Basel, and Glarus. Watch-making is established at Geneva, Neuchatel, and Bern. Wood-carving, first introduced in the Oberland, employs many thousands.

### Communications and Trade.

The character of the country presents many obstacles to communication between the different parts of it, and also with the adjacent countries on the south and east. Although there were no carriage roads across the Alps till the beginning of the nineteenth century, there are now some of the finest mountain roads in the world across the Swiss mountains. The Simplon road was opened in 1805, and the St Gothard in 1830. This latter has been largely superseded by one of the longest railway tunnels in the world. Other tunnels have been made, and in 1906 the Simplon tunnel was opened, reducing the distance between Paris and Milan to 519 miles. There are no canals or navigable rivers. Among the exports are silk and cotton goods, embroidery, trimmings, watches, machinery, locomotives, cheese, and condensed milk; the imports are chiefly articles of food and luxury, and raw materials for manufacture.

### Administration and Towns.

The Republic of Switzerland became a federal state in 1848. The president is chosen annually, and each canton is a state with a miniature constitution and government. Every citizen has a vote, and the Referendum and the Right of Initiative are two important privileges of the Swiss constitution.

*Bern*, on the Aar, is the capital. *Zurich*, a railway centre, is the largest town, with most of the textile and transit trade. *Basel*, on the Rhine, has silk weaving. *Geneva*, on the French frontier, has watch and clock-making. *Lausanne* and *Neuchatel* are important trade towns in the west.

## Italy.

**Position and Extent.**

Italy is the second of the three peninsulas of southern Europe and is separated from central Europe on the north by the great mountain barrier of the Alps. The country has well-defined boundaries, for on the other sides it is washed by the sea. Including Sicily, Sardinia, and some smaller islands, the area of Italy is 110,646 square miles, or rather less than that of the British Isles. The greatest length is 710 miles and the breadth varies from 350 miles in the north to 20 miles in the south. To the area of the kingdom of Italy must now be added its colonial possessions in Africa, viz. Eritrea, Italian Somaliland, and Libya, which consists of Tripolitania and Cyrenaica; and as a result of the Great War Italy has obtained large tracts of former Austrian territory.

**Surface and General Features.**

Forming the northern boundary, the Alps sweep round in a great curve from Nice to Trieste; but the highest mountain entirely in Italy is Gran Paradiso (13,652 feet) in Piedmont. South of the Alps is a great alluvial tract, known as the plain of Lombardy. This region, which belongs to the basin of the Po, is fruitful and flourishing, irrigated as it is by numerous streams and canals. Some of the tributaries of the Po expand into lakes of considerable beauty, of which Lago di Garda, Lago Maggiore, and Como are the most noteworthy. From Nice to Spezia the coast region is known as the Riviera, and the mountains come close to the sea. On the other side, from Rimini to Trieste, the coast is flat, marshy, and fringed with lagoons. The long peninsular portion of Italy is traversed by the Apennines, composed of limestone rocks. The highest peak is Monte Corno (9580 feet), and the mean elevation

of the range is not more than 5000 feet. Between the main chain and the sea on the west coast there is a volcanic region extending from Tuscany to Vesuvius (4206 feet), the only active volcano. Etna (10,700 feet) and Stromboli in the Lipari Islands are other volcanic centres. The Apennines form the watershed of the peninsular portion of Italy and the chief rivers flow into the Tyrrhenian Sea, but only the Tiber and Arno are navigable for part of their course.

### **Climate and Rainfall.**

The climate of all Mediterranean countries is warm and dry, but subject to occasional bitterly cold winds from the Alps and hot dry winds from the African deserts. Throughout the peninsula the temperature is lowered by the Apennines, and the Adriatic coast, exposed to the north-east winds, is colder than corresponding latitudes on the west coast. The plain of Lombardy, open to the cold winds from the Alps and closed to those from the south, has a cold short winter. In some of the marshy districts malaria occurs in the bad weather from July to October. The highest recorded temperature is 109° F. in Apulia. The Italian summer is deficient in rain, and winter is the wet season. The rainfall is heavier on the western than on the eastern side, and, while the northern region has about 40 inches yearly, the southern portion has not more than 27 inches.

### **Productions.**

Of the total area of Italy only 10 per cent. is uncultivated, and this unproductive portion includes lagoons and marshes which could be drained and brought under cultivation. The cultivated area may be considered under five zones. The first comprises the region which grows oranges, lemons, and similar fruits; it extends along the southern and western coasts of Sardinia, comprises a great part of Sicily, and predominates on the southern Italian coasts past the

gulfs of Salerno and Sorrento to Naples. The wine region of Italy extends over the plains of Lombardy and Emilia, and covers the mountain slopes of Sardinia and Sicily and the whole length of the Apennines. The region of chestnuts extends from the valleys to the plateaux of the Alps, and along the northern slopes of the Apennines, as well as the southern slopes and the ranges of Sicily and Sardinia. The wooded region covers the Alps and the Apennines above the chestnut level. Between the regions of tree culture, cereals, vegetables, and textile plants are cultivated. Cereal cultivation is foremost and wheat is the most important crop. Next come maize, rice, rye, barley, oats, and millet. Pasture occupies about 30 per cent of the cultivated area, and potatoes, turnips, and beetroot are extensively grown. Market-gardening is largely carried on, and the working classes grow white beans and lupins for food and fodder. The chief industrial plant is tobacco, which is a Government monopoly, and the textile plants are hemp, flax, and cotton.

The vine is cultivated throughout the length and breadth of Italy, and the oils obtained from the olive are considered the best in the world. The mulberry tree, whose leaves serve as food for silkworms, is cultivated in every region. Almonds are widely cultivated in Sicily, Sardinia, and the southern provinces, and hazel-nuts, figs, peaches, pears, apples, locust-beans, and pistachio are among other fruits. Good timber is furnished by the oak and beech, and by the pine and fir forests of the mountains.

Numerous varieties of breeds of cattle are distributed throughout Italy, and enormous flocks of sheep are kept by professional sheep-farmers, who pasture them on the mountains in summer and bring them down to the plains in winter. The number of goats is decreasing, but there is an increase in horse-breeding. The north of Italy is famous for its dairy centres, and such cheeses as Parmesan and Gorgonzola are world-famous.

The minerals of Italy are of considerable value. Sulphur is obtained from the volcanic districts, and petroleum is found in central Italy. Iron is mined in Elba, quicksilver and tin in Tuscany, and lead and zinc in Sardinia. Stone quarries are extensively worked, and Italian marble, especially that of Carrara, is exported in large quantities. Lava is used for paving and for building in Sicily and southern Italy.

### Industries.

Great progress has been made of late years in the manufacture of machinery, and the importation of coal is very large. Locomotives, railway engines, and electric tramcars are extensively made in the north of Italy and in the vicinity of Naples. Steel rails, armour plates, and ordnance are made at Terni, ships at Leghorn, Genoa, and Naples, motor-cars at Turin, and submarines near Spezia. The silk industry, especially in Lombardy, Piedmont, and Venetia, is thriving, and there is scarcely a family of peasants that does not breed silkworms. The cotton industry is developing, and among other textile industries are those connected with wool, flax, and jute. Chemical industries show an output of over £2,000,000 per year, and match-making is a flourishing Italian industry with 200 factories. Straw-plaiting is a characteristic Florentine industry, and paper-making and furniture-making are noteworthy. Italy has a foremost place in artistic industries, and fine glass, beautiful china-ware, jewellery, and lace-making are carried on with great success. Italian fisheries have greatly developed. Most of the fishing boats start from the Adriatic coast, the coral boats from the western coast, and the sponge boats from Sicily and the west coast. Tunny, anchovies, and sardines are largely caught and exported.

### People and History.

There is a great contrast between the people in north and south Italy, and this may be accounted

for by the fact that Phoenicians, Greeks, Berbers, and Arabs from the south were brought into contact with Slavs, Germans, and Celts from the north in the Roman period, when all the groups adopted the Latin language. Down to the present day the Italians have a remarkable unity of speech, but, of the various dialects, Tuscan is the purest form of the language. The population of Italy is 36,000,000, and there is yearly a large emigration to foreign lands, especially to North and South America. Italy was first united by Rome, on whose fall Charlemagne became its ruler. Spain, France, and Austria have also had rule over portions of Italy, but in all periods of her history Italian influence on the world has been marked. Especially was this the case in the Middle Ages, when intellectually, and commercially, Italy took the lead among European nations. It was not till 1862, however, that modern Italy was constituted, and in 1870 the Papal States were added, and Rome became the capital. During the succeeding 50 years the political conditions of Italy have been improved, and great progress has been made in every direction. Specially noteworthy is the evident desire of the Italian people for expansion, and this has resulted in the conquest of Tripoli.

The Roman Catholic religion is recognised by the state and claims almost the whole of the people. The Pope is a sovereign prince, although his temporal possessions have been lost to the state. Nearly all the religious houses have been suppressed.

### **Trade and Communications.**

Italian trade with foreign countries amounted in 1918 to upwards of £564,000,000, with an excess of imports over exports of £464,000,000. The commercial development of Italy is apparent when we note that this foreign trade has more than trebled in 4 years. During the last 40 years Italy has been transformed from a purely agricultural country into a largely in-

dustrial country, so that trade in raw stuffs and manufactured articles exceeds that in food products. Silk is the most important export, and cotton is the chief item in Italian imports. Cattle are largely imported, and dairy and farm products, especially eggs and cheese, are valuable exports. Wheat and maize are imported from Russia and Rumania, and macaroni is sent to the United States and Great Britain. Wine, oranges, lemons, and fresh vegetables are exported in large quantities, and, while rubber is purchased from Brazil and the Congo, Italy sends away increasing values of rubber tyres and motor-cars. The trade with Great Britain and the United States is very large and shows a tendency to expand.

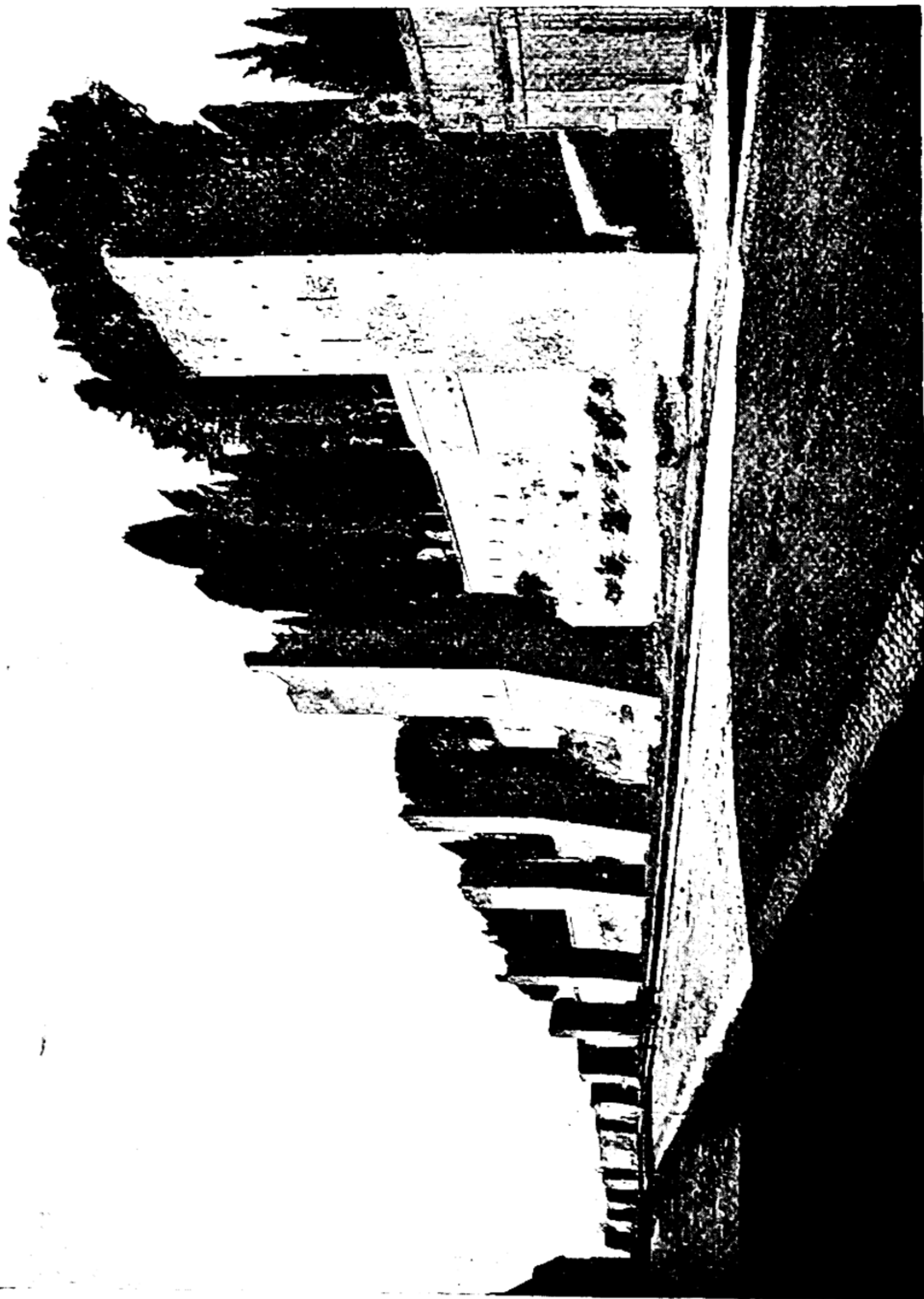
The railway system leading to Italy is unique on account of the many long tunnels. The most important lines are by the Mont Cenis from France, the Simplon from Switzerland and France, the St Gothard from Switzerland and Germany, and the Brenner Pass, which crosses the Alps without a tunnel, from Austria and Eastern Germany. There are now upwards of 10,000 miles of railway, the greater part being owned by the state. The Sicilian railways are connected with the system of the mainland by ferry-boats, on which through-carriages from Reggio to Messina are conveyed across the Straits.

### Administration.

The government is a limited monarchy, and there are two houses of parliament. Italy is divided into 15 regions, or compartments, each of which includes several provinces.

### Towns.

The capital is *Rome*, the "Eternal City," formerly the centre of the ancient Roman republic and of the Roman empire, and the headquarters of the Christian Church. It is unique among the historical cities of the world and its remains comprise ancient walls and



Rome: the walls of Aurelian.

buildings, the fora, baths, and arches. The galleries and collections of Rome are the largest in the world, and the Vatican, the Lateran, the Capitoline, and the National Museums have priceless treasures of art. Rome is rapidly growing in population and its industries are increasing. *Milan*, the junction for the St Gothard railway, is the great centre of the silk trade. *Turin*, the capital of Piedmont, is the centre of the motor-car industry. *Florence*, on both banks of the Arno, is the chief town of Tuscany and the richest city in the world in collections of works of artistic interest. At *Venice* are the famous St Mark's and the Doge's Palace. The city is built on 120 islets and was once the chief commercial city of the world. *Genoa* is the chief port of Italy. Its growth is due to the opening of the Alpine tunnels, so that it now competes with Marseilles. *Leghorn*, the chief seaport of Tuscany, has a flourishing trade and is an important ship-building centre. *Palermo*, the capital of Sicily, is a favourite winter resort and the chief seaport of the island, exporting oranges, lemons, and other fruits. *Cagliari*, the capital of Sardinia, is built on a precipitous hill and overlooks a bay.

## The Maltese Islands.

This group consists of Malta and Gozo, and some smaller islands. Malta is about 60 miles from Sicily and 200 miles from Cape Bon in Africa. It is the headquarters of the British Mediterranean fleet and the principal coasting station in the Mediterranean : and owing to the enormous strength of its fortifications, it is a very important British dependency, securing as it does the route to India by the Suez Canal. Malta came into our possession during the Napoleonic wars and was transferred to Britain by the Treaty of Paris in 1814. The island is densely inhabited by nearly 230,000 people, many of whom speak a debased Arabic, although the upper classes speak Italian. Large

crops of wheat and potatoes are grown, and fruits and flowers are plentiful. Filigree ornaments are made by the people and cotton is manufactured to a small extent. *Valetta*, the capital, is a powerful stronghold, and the Governor's palace was formerly that of the Order of St John, to whom the island belonged for nearly 300 years.

## The Iberian Peninsula.

### Position and Extent.

The Iberian Peninsula, which comprises Spain and Portugal, has an area of 230,172 square miles, of which Portugal has about one-sixth. This southwestern peninsula of southern Europe is cut off from the mainland by the Pyrenees, and its shores are washed by the Bay of Biscay, the Atlantic, and the Mediterranean. This peninsula has been well described as "a world in itself" and "a world of contradictions," and it has been remarked that although the sea surrounds seven-eighths of its periphery, it has all the features of a continental mass with restricted access to the ocean.

### Surface and General Features.

Reference to the map will show that this pentagonal mass terminates on its seaward faces in a high and regular coast-line. There are few inlets on the coast; the rivers are only partly navigable; and there are not many off-lying islands. The Pyrenees, separating Spain from France, are continued westwards by the Cantabrian and Esturian Mountains, which form the northern boundary of a tableland covering the greater part of the peninsula with an average height of 2700 feet. The tableland is bordered everywhere, except in the west, by mountains and steep slopes. The highest peaks are Maladetta (11,170 feet) in the

Pyrenees and Mulhacen (11,530 feet) in the Sierra Nevada.

The rivers of the peninsula are of considerable length, but are so obstructed by rapids and shallows as to be of little use in navigation, and their beds lie in deep valleys far below the level of the tableland. The Guadalquivir is the most important of the rivers as regards navigability, and the level of its water is fairly uniform. The Ebro has the largest basin and is the only navigable river on the east side.

### Climate and Rainfall.

The regular character of the coast-line and the great elevation of the plateau give Spain a more continental character in its extreme range of temperature than any other European peninsula. The western side of the plateau is more humid and much colder than the eastern. In the interior the air is everywhere dry, and the coast-strip between Gibraltar and Almeria has the warmest winter climate of Europe. The climate of Madrid is the most extreme in Western Europe; the mean temperature ranges from 36° in January to 76° in July. In summer the temperature may rise to 107° F. in the shade, and in winter skating is not uncommon. Rainfall is most abundant in the coastal regions, and as a rule it diminishes from north-west to south-east. The total annual rainfall is less than 20 inches over most of the peninsula, and the height of summer is a period of extreme drought, more especially in the southern part.

### Productions and Industries.

Although mining and other industries are developing, agriculture is the mainstay of the people; it is estimated that nearly 70 per cent. of the people are engaged in it. A good deal of the country is arid, and at least 4000 square miles are artificially irrigated at great expense. The "huertas" (gardens) of Valencia

and Murcia are nourished in this way and yield southern fruits of all kinds and mulberries, as well as rice and maize. Oranges are grown at no great distance from the coast; the sugar-cane is cultivated in Granada, Malaga, and Almeria; and the vine thrives. The chief Portuguese wines (port, etc.) come from the valley of the Douro, and the Spanish wine (sherry) is made in the south. Spanish wool, once so famous throughout Europe, no longer ranks so high in quality. Wheat, barley, rye, and maize are the chief grain crops for home consumption, and chick-peas, onions, and garlic are largely grown for exportation. The cork-oak yields the most important forest product, and the olive abounds in the southern part of the peninsula.

The mineral wealth of Spain is considerable but not fully developed. Iron-ore of excellent quality is mined near Bilbao, Corunna, and Almeria. Lead and silver are associated at Linares, and Almaden has one of the chief quicksilver mines in the world. The principal copper mines are at Rio Tinto, and bay-salt is produced on the southern coasts of both Spain and Portugal.

The manufactures include cotton and other textile goods in Catalonia; and there are iron industries in the neighbourhood of the iron mines. There is some leather work, esparto-plaiting, silk-spinning, and weaving, and at some of the seaports ship-building is carried on.

### **People and History.**

The people are of mixed race, but the Iberians were probably the earliest inhabitants of the peninsula, and the Basques in the north-east are their descendants. The Celts gained a footing in the north-west, and the Romans civilised the whole country. The Goths invaded the land, and the invasion of the Arabs and Moors in the eighth century had great effect on the country, as regards the physical type of the people, their customs, and the geographical names. It was not till 1492 that the Moors were finally conquered; and Spain became one Christian Kingdom in 1512. Spain

and Portugal were great European nations in the fifteenth and sixteenth centuries. For about 100 years Spain was mistress of the world; but the pride of the ruling classes has probably been the cause of the decadence of both countries. The history of Spain in the nineteenth century sank to its lowest with the loss of its American and eastern colonies. Spain, with a population of 20 millions, is a limited monarchy with two houses of parliament (Cortes). Portugal, with 6 million people, became a republic in 1910.

### Trade and Communications.

The trade of both countries is similar. Iron-ore and wine are the chief Spanish exports, and lead, copper, and quicksilver, as well as southern fruits, cork, and paper are also of some importance. Spain imports raw cotton, wheat, coal, and timber. France, England, and the United States are Spain's best customers. Figs, cork, and copper-ore are among the chief exports of Portugal. The United Kingdom and Brazil have the largest share of Portuguese trade. The roads of Spain and Portugal are not good, and the country, from its mountainous character, is unfavourable to internal communications. The Pyrenees are as yet uncrossed by any railway, and there are so many obstacles that little progress is likely to be made with railway construction.

### Towns of Spain.

*Madrid*, the capital, in New Castile, is the chief railway centre. *Barcelona* has been for centuries the chief seaport and industrial town. *Valencia*, *Cartagena*, *Malaga*, and *Seville* are all important seaports and industrial towns. *Cadiz* has a fine harbour, but the trade is declining. *Huelva* exports copper to Britain. *Bilbao* ships iron-ore and has a large foreign trade.

## Towns of Portugal.

*Lisbon*, on the Tagus, is the capital and chief seaport. *Oporto*, on the Douro, is the second port, with a large wine trade. *Setubal*, the third port, has salt-works.



Cadiz.

## Gibraltar.

Gibraltar, at the southern extremity of Spain, is a celebrated fortress which has belonged to Britain since 1704. Its importance lies in the fact that it dominates the entrance to the Mediterranean, and

the fortifications, constructed at enormous cost, may be considered impregnable. It is an important coaling station as well as a naval station, and recently much has been done to improve the harbour accommodation. The area of this fortress, situated on a rocky promontory, 1408 feet high, is 1266 acres. The population, including the military, is about 27,000. Gibraltar is within four days of England and is a free port.

## CHAPTER VIII

### ASIA

#### Position and Extent.

Asia, the largest of the great divisions of the world, is the north-eastern portion of the eastern hemisphere. This massive continent has an area of more than seventeen million square miles, and is thus more than four times the size of Europe, its western boundary. On the other three sides it is washed by the Arctic, Pacific, and Indian Oceans. The narrow isthmus of Suez separates it from Africa. Originally the name Asia was applied to the plain of Ephesus, then extended to the peninsula now known as Asia Minor, and later to the whole continent. It has been well remarked that while Europe is geographically a dependency of Asia, yet Asia is politically a dependency of Europe, as is evidenced by the conquests of the British, Russians, French, and other European nations.

The extreme length of the mainland is 5350 miles, measured from Cape Chelyuskin in the north to Cape Buru at the end of the Malay Peninsula. The extreme breadth of 5900 miles is from Cape Baba in Asia Minor to East Cape on Bering Strait, and gives a range of  $164^{\circ}$  in longitude, representing in time about 11 hours.

#### Surface and General Features.

The physical features of Asia are more complex than those of any other continent, and its structure includes the eastern continuation of Europe and of Northern Africa. The surface of Asia may be considered under four divisions: the central mountain

area, the northern lowlands of Siberia, the southern valleys, and the southern plateaux of the peninsulas of Arabia, India, and Malaysia.

1. The central mountain area is the most noteworthy of the physical features of Asia. The principal mountain ranges originate in the Pamir, the greatest mountain knot in the world. No less than five great



On the grass-lands of Tibet.

mountain chains radiate from this central highland. The Himalayas extend in a south-easterly direction for 1500 miles and contain the highest peaks in the world—Mount Everest (29,000 feet), Kanchinjanga (28,146 feet), and Mount Godwin-Austen (28,260 feet). The Kuen-lun range, with peaks of over 20,000 feet, runs east from the Pamir. The Altyn-tagh and Nan-Shan mountains are branches of the Kuen-lun in a

northerly and easterly direction. The high tableland of Tibet is between the Himalayas and the Kuen-lun and Altyn-tagh mountains. The Tian-Shan range, with heights of over 25,000 feet, runs north-east for 1500 miles from the Pamir, and is followed by the Altai Mountains, the Yablonoi, and the Stanovoi Mountains, which extend to Bering Strait. From the Pamir the Hindu-Kush extends westwards and with the Elburz Mountains borders the plateaux of Afghanistan and Iran on the north. These mountains are followed by the mountains of Armenia, with Ararat (17,160 feet), and the Taurus Mountains reaching to the Mediterranean. The Sulaiman Mountains form the eastern boundary of the Iran plateau and have heights of 12,000 feet. In India, the Dekkan is bounded on the north by the Vindhya Mountains, and by the Western and Eastern Ghats on the other sides.

2. The northern lowlands of Siberia form a vast plain stretching from the Caspian Sea and the Ural Mountains to the extreme north-east of the continent. These lowlands are widest in the west, and include the basin of the Ural Sea and the greater part of the basins of the Obi, Lena, and Yenisei. Near the Caspian Sea the plains are below sea-level, and in general this extensive area is covered with alluvium.

3. The southern valleys of Asia begin with the valleys of the Euphrates and Tigris and the lowland of the Persian Gulf. In the northern portion of India, the valleys of the Indus and the Ganges form the great plain of India, and the valley of the Irawadi in Further India is the third and smallest of the southern Asiatic valleys.

4. The fourth of the physical features of Asia is concerned with the southern peninsular plateaux of Arabia, India, and Malaysia. They are not folded mountains, but tablelands composed of very ancient rocks and separated from the rest of Asia by the valleys of the Euphrates and Tigris, the great plain of India, and the valley of the Irawadi respectively.

There is evidence that these plateaux once formed part of a continent which extended across the Indian Ocean from Africa on the west to Australia on the east.

### Volcanoes.

The volcanoes of Asia are mostly near the coasts, especially on the east side, forming part of the Pacific system. The most famous of Asiatic volcanoes are Fuji-yama in Japan and Krakatau on the strait of Sunda, memorable for its remarkable outburst in 1884. The numerous active volcanoes extending from Kamchatka, through the Kurile Islands and Japan, through the Philippines, the Moluccas, and the Sunda Islands, rise from extreme oceanic depths; and throughout this volcanic area earthquakes are frequent and severe.

### Coasts.

The coasts of Asia are much more indented by gulfs and peninsulas than those of Africa or America, but its coast-line of 33,000 miles is not so long as that of Europe. At least one-fifth of its shores is washed by the ice-bound Arctic Ocean or the foggy and icy sea of Okhotsk. Besides the three great southern peninsulas already mentioned, Asia Minor extends on the west, and Korea and Kamchatka on the east. The Pacific coast of Asia is remarkable for its festoons of islands extending from Malaysia to Alaska. The islands of Borneo, the Philippines, and Formosa enclose the China Sea; the Japanese Islands enclose the Yellow Sea and the Sea of Japan; Sakhalin and the Kurile Islands enclose the Sea of Okhotsk; and the Aleutian Islands form the southern boundary of the Bering Sea. The other islands of Asia are either detached portions of the continent, such as Ceylon in the south, or of volcanic origin, as the Andaman and Nicobar Islands. The Maldives and Laccadives are a chain of coral islands. It is

*P. W. S. S. S.*

worth noting that the Kara Sea in the north has been crossed every year in recent times by ships bound for the Yenisei when the ice is broken up. Norden-skiöld stands alone as the man who has sailed round the north coast of Asia.

### Rivers and Lakes.

The main watershed of Asia runs from east to west, and some of the chief rivers rise on the central plateau. Flowing from these highlands and finding their way to the Arctic Ocean after long courses through the Siberian plain are the Obi, Yenisei, and Lena. Three great rivers belong to the Pacific drainage and are all navigable for thousands of miles. The Amur rises on the highlands to the south of Lake Baikal, and the Hoang-ho and Yang-tse-Kiang rise on the plateau of Tibet. The Hoang-ho burst its banks in 1887 and flowed through a fresh channel into the Gulf of Pe-chi-li. The Indo-Chinese drainage area has the Mekong, Salwen, and Irawadi rising in the eastern parts of the high plateau; the first two discharge into the Pacific Ocean and the latter into the Indian Ocean. The Indian peninsula has three great rivers, the Brahmaputra and the Indus rising in Tibet, and the Ganges on the southern slopes of the Himalayas. The Ganges and the Brahmaputra discharge their waters into the Bay of Bengal by the same delta. The other rivers of India rise on its plateau and flow across the country either to the Arabian Sea or the Bay of Bengal. The Tigris and Euphrates both rise in the plateau of Armenia, flow in parallel courses through the Mesopotamian valley, and enter the Persian Gulf as one stream—the Shat-el-Arab.

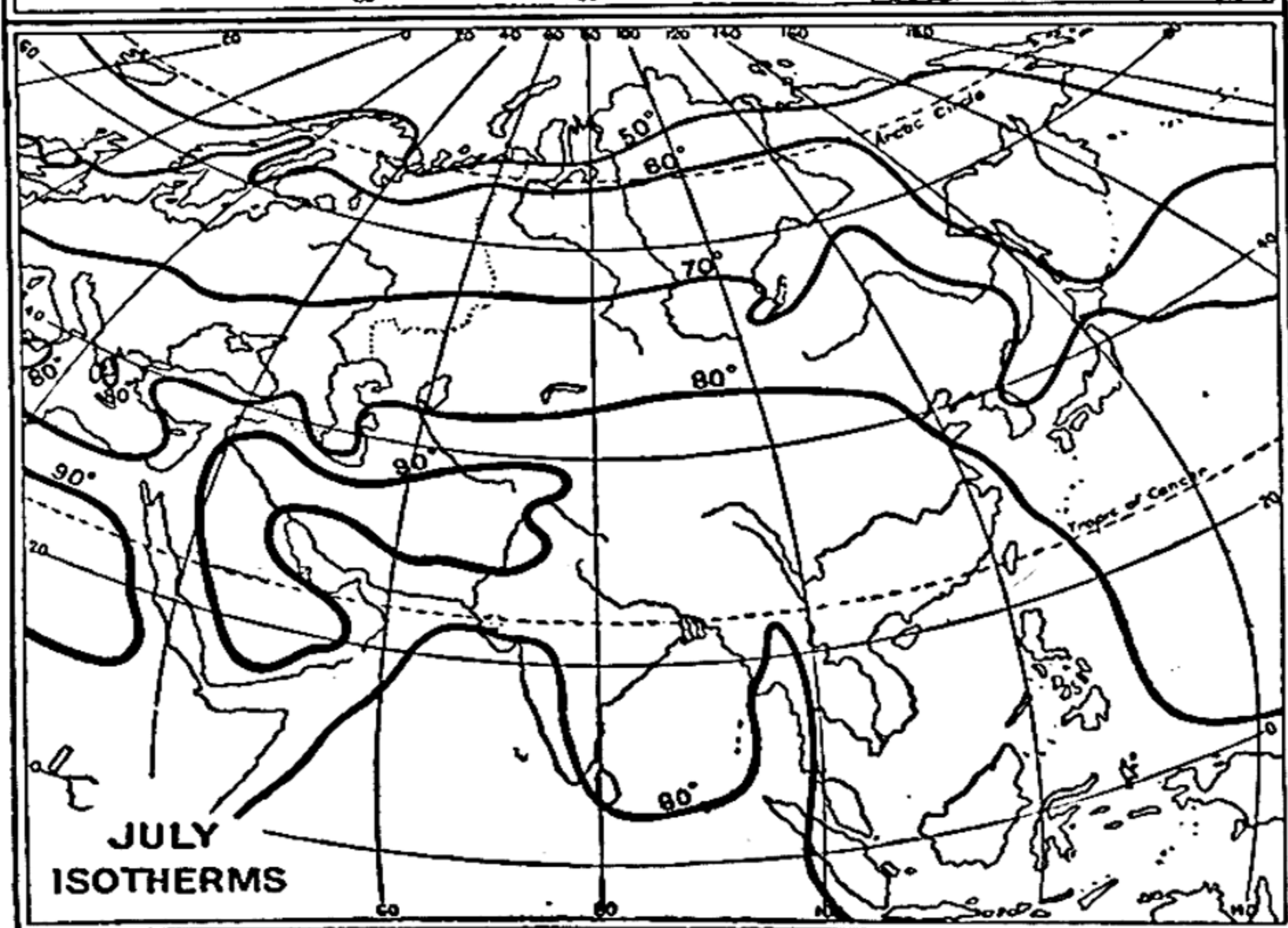
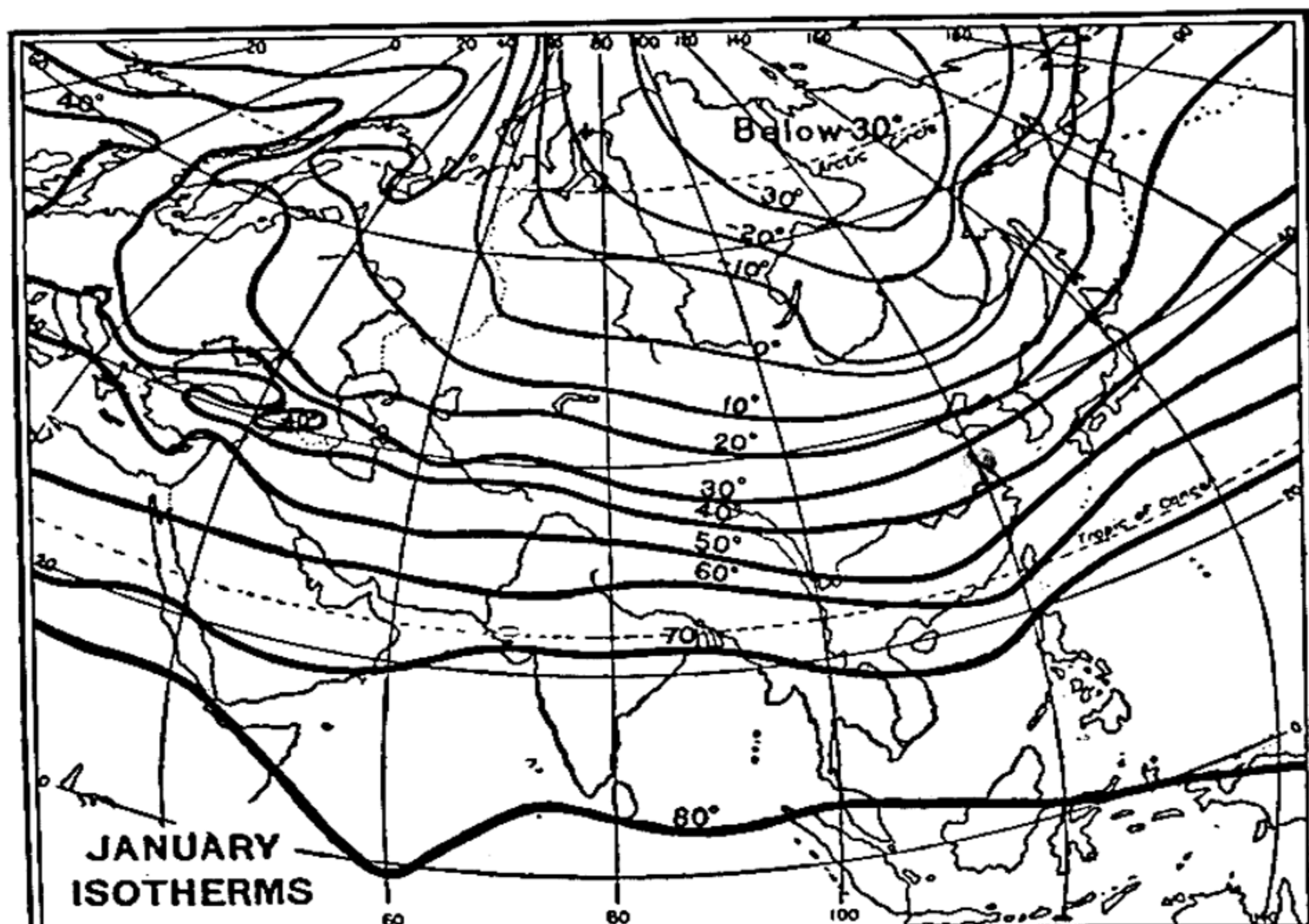
A remarkable feature of the hydrography of Asia is the extensive area of internal drainage. The region of Gobi is watered by the Tarim, which falls into the shallow Lob-nor; the drainage basin of Lake Balkash has the Ili and smaller rivers; Lake Aral is supplied

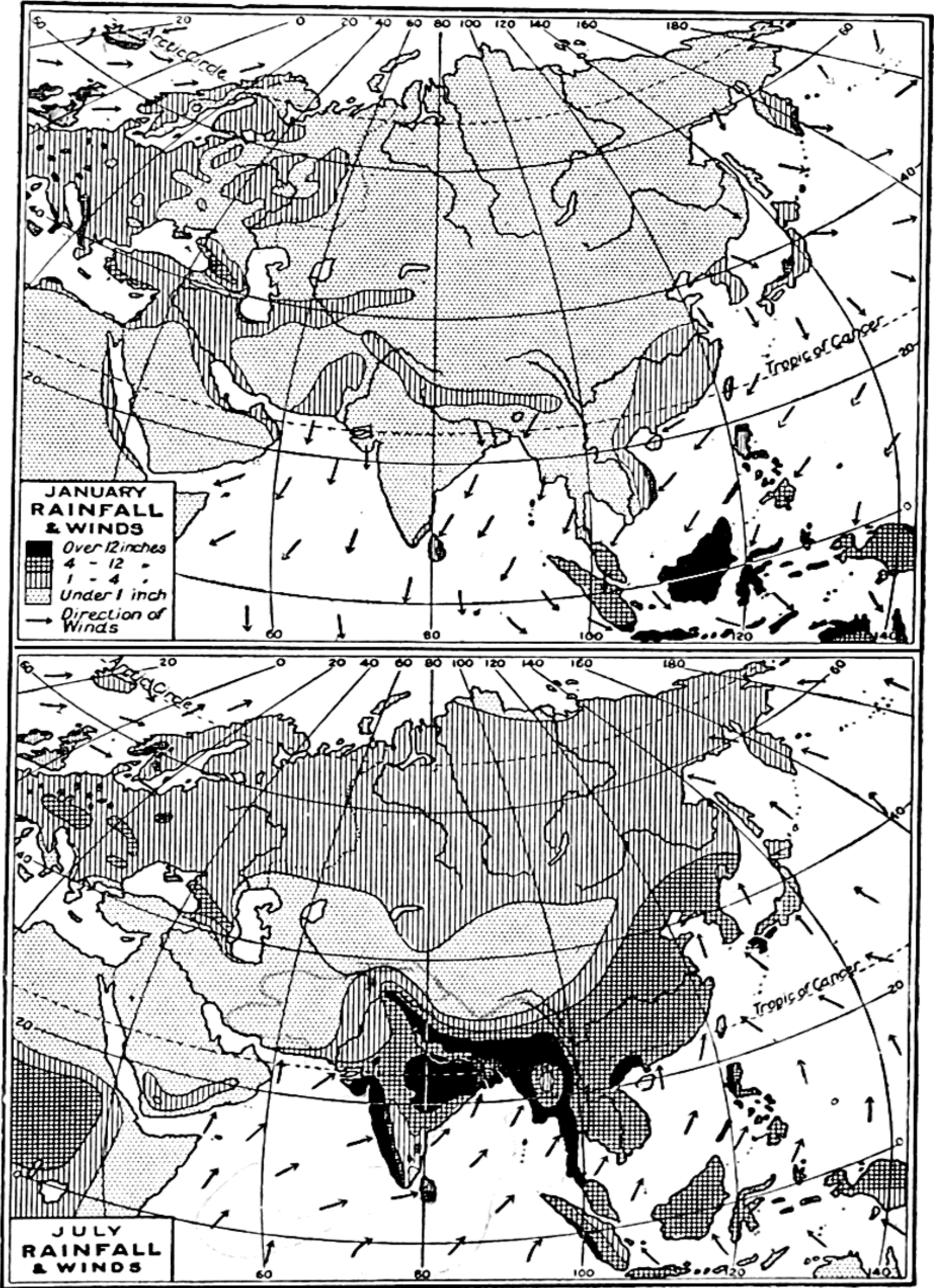
by the Syr Daria and Amu Daria; the Caspian Sea receives the Ural; and into the Dead Sea falls the Jordan. The *Caspian Sea* is the largest lake in the world; its area is 170,000 square miles. Its water is salt and there are no tides, but it is subject to violent storms. *Lake Baikal*, frozen from November to May, is a fresh-water lake and is reputed to be the deepest in the world.

### Climate and Rainfall.

With the exception of some of the coastal regions, Asia has a continental climate, which shows great extremes. This will be readily understood when the immense size of Asia is considered. The whole continent is north of the equator, Cape Romania being about 100 miles from it, and the greater part is in the temperate zone, although a portion of Siberia falls within the Arctic Circle. The greatest extremes between the temperatures of winter and summer are experienced in the interior tablelands, but the coldest region is in north-eastern Siberia at Verkho-yansk, where the mean temperature of January is  $-60^{\circ}$  F., or  $92^{\circ}$  below freezing-point. The tropical regions include the south of Arabia, the south of India, and the peninsulas of Siam and Malaya. The eastern coast has its temperature raised by the influence of a warm current, the Kuro Siwo. Thus Japan has a mild climate, while opposite places on the mainland in the same latitude have severe Arctic winters. The January isotherms of Asia range from below  $-30^{\circ}$  F. to  $80^{\circ}$  F. and the July isotherms from  $50^{\circ}$  to  $90^{\circ}$  F. It will be noticed that the  $90^{\circ}$  isotherm is a closed curve embracing the hottest regions of Asia.

The rainfall in the interior is scanty, for the winds lose their moisture in their progress over the coastal regions and the outer slopes of the highlands. There is a region within the Arctic Circle with a mean rainfall of only 1 inch for the wettest month. The countries within the Monsoon area have heavy rains when the





summer winds blow. Cherrapunji in Assam has an average rainfall of 474 inches per year, and in one day in 1876 a fall of 40 inches was recorded. At the change of the monsoons, atmospheric conditions are uncertain, and then the cyclones of the Indian Ocean and the typhoons of the eastern seas are prevalent.

### Plants and Animals.

The vegetation of Asia ranges from the mosses and lichens of the Siberian tundra to the tropical jungles and teak forests of India and Burma. The dense forests are not so extensive as those in Africa and South America. Along the river valleys of Siberia the forests produce the larch, birch, and poplar; while the steppe-lands of the south and south-west border the forests and yield fruits, vegetables, and cereals. The western portion of the warm zone produces olives, figs, pomegranates, pines, cedars, and myrtles; the eastern portion of the warm zone has the tea plant, camellias, beeches, and conifers. The jungles of south-eastern Asia have banyans, palms, and other great trees with innumerable creepers round their stems and orchids on their branches. The fertile plains of the great rivers of the south and east of Asia yield crops of rice, sugar, cotton, tea, and indigo. The adjacent islands grow the coco-nut, sago palm, tamarind, bread-fruit, and spices. The cultivation of tea has developed of late years in India and Ceylon, and coffee is grown in increasing quantity in Arabia and India. Cinchona is cultivated in the south and south-east of Asia, and cacao has recently been introduced into southern India.

The fauna of the north differs from that of the south, as the two regions are separated by lofty mountains and wide deserts. The wild animals of Asia are very numerous and include the Asiatic elephant, the rhinoceros, the buffalo, the yak, and the camel. In Siberia there are bears, foxes, sables, and other fur-bearing animals, while wolves are found in packs on the great steppes. Lions live in Arabia and Persia,

and the tiger is found in India, China, and northward to Siberia. The wild ass roams over the western plains; and antelopes occur in India and range into Siberia. The reindeer and Samoyede dogs of Siberia are used as transport animals in the northern regions. In the central arid plains there are many species of wild sheep including the largest of mountain sheep, the *ovis poli*. It is worth noting that most of our domestic animals are natives of Asia. Reptiles are numerous—crocodiles abound in the southern rivers; seals and whales are hunted in the Polar Seas; and pearl-oysters are brought up by divers from the tropical waters of Ceylon.

### Minerals.

Asia is rich in a great variety of mineral products, most of which are little worked. Gold is found in the Urals, the Altai Mountains, and Eastern Siberia; copper in Japan, India, and Siberia; and tin in the Malay Peninsula. Iron-ore is found in many regions, but is not much worked. China and Japan have immense coal-fields, and petroleum wells are numerous in the Caucasus and Caspian regions. The diamonds of India, the rubies of Burma, and the sapphires of Ceylon are of world-wide repute. Platinum is extracted from the Urals, silver is found in Siberia, and mercury in Japan.

### People, Races, and Religions.

The estimated population is variously given, but with some reserve it may be stated at upwards of 800 millions, or more than one-half of the world's population. The distribution of the people is very uneven and depends largely upon the climate, rainfall, and soil. In parts of China and India the density is greater than in England, but the average for the whole of Asia is only 47 inhabitants to the square mile.

The people of Asia belong to three different groups. The Mongolians are the most numerous and embrace the Chinese, Japanese, Burmese, and Tibetans. The Caucasians are found in India, Persia, and southwestern Asia. It should be remembered that the home of the Caucasians was western Asia, and that they migrated from that district to Europe. The Negritos



Mongol women in gala dress.

of the Malay Peninsula and Archipelago constitute the third division of the Asiatic people.

The great religions of the world—Judaism, Christianity, Mohammedanism, Buddhism, and Brahmanism are all of Asiatic origin. At present Buddhism is the dominant religion and has 500 million followers in Tibet, China, and Japan. Brahmanism is the religion of the Hindus, while most of the people of

western Asia are believers in Mohammedanism. Jews are scattered in western and central Asia ; Christians are numerous in Armenia and in European settlements ; and Parsis or fire worshippers are found in India and Persia. The Negroids of the south-east and the people in the north of Siberia are heathen.

### Industries and Manufactures.

The chief industries are agricultural and pastoral ; but many of the people are engaged in mining and fishing, and in some of the countries, especially India and Japan, there are various manufactures. Over a large area, especially on the steppe-lands, the nomadic population own horses, camels, sheep, and goats. The majority of the people of Asia, especially those in India and China, are engaged in agriculture and produce fine crops of rice and other cereals. Owing to the introduction of machinery and European methods of work, the manufacture of cotton and other goods in Japan and India is rapidly increasing. The older hand-work of the people is of considerable excellence, as is evidenced by the wool-weaving of India, the rugs and carpets of Persia and Asia Minor, the silk-weaving of China, the metal and lacquer work of Japan, and the pottery of China. Many of these articles are artistic and are exported to Europe.

### Internal Communications.

The great rivers of Asia, especially those of India, China, and Siberia provide communication over extensive regions. The roads of Asia, except those of India and China and a few main lines elsewhere, are mostly footpaths or tracks marked in the deserts by wells found at long distances. The deserts, plateaux, mountains, and forests are all barriers to communication between various parts of the continent. The chief means of transport for travellers in the

interior are the caravans of camels, but donkeys, yaks, and even goats and sheep are used in crossing the passes of the Himalayas. In the far north reindeer and dogs are used.

Railways are extending in India, Japan, and China, and Siberia is crossed by a continental railway from Russia to Vladivostok and Port Arthur on the Pacific. India has the most complete system of railways and most of its towns are now connected by rail. All the chief ports in the south and south-east of Asia are in regular steam communication with Europe, the main route being via the Suez Canal and the Red Sea. There is telegraphic communication between all the chief towns in India, China, and Japan, and, besides an overland line, there is a submarine cable from India via Aden to the head of the Red Sea.

## Siberia, Transcaucasia, and Turkestan.

### Position and Extent.

Siberia, Turkestan, and Transcaucasia, occupy the entire northern portion of the continent and much of the west. The total area is estimated at 6,294,119 square miles, of which Siberia claims 4,831,882 square miles, Turkestan 1,366,832 square miles, and Trans-Caucasia the remainder.

### Surface and General Features.

*Siberia* consists mainly of a vast plain in the north and west; and of tablelands and mountains in the east and south-east. The great navigable rivers, the Lena, Yenisei, and Obi draining into the Arctic Ocean, and the Amur into the Sea of Okhotsk, afford, with their numerous tributaries, a large extent of

waterways. It is unfortunate for Siberia that these fine rivers flow into seas closed by ice for many months of the year. *Turkestan* may be said to consist of fertile plains and low tablelands, mostly desert. The whole of this region is one of the inland drainage districts of Asia. Three of the rivers flow into large salt lakes. The Syr Daria and the Amu Daria flow into the Sea of Aral and the Ili into Lake Balkash. These rivers and their tributaries irrigate large tracts, of which the Merv oasis is the largest; but the oases of Khiva, Bokhara, Samarkand, and Tashkent are of considerable importance. *Transcaucasia* consists of low-lying steppe-land until the Caucasus Mountains rise abruptly from the plains. These mountains, 700 miles long, culminate in Mount Elbruz, 18,526 feet high.

### Climate and Rainfall.

The climate of *Siberia* is very severe; the temperature during half the year is below freezing-point. The cold Arctic winds sweep over this country, as there is no mountain barrier to stop their progress. The summer in the eastern part is short, but the temperature and bright sun make this region as warm as parts of Europe lying in a more southerly latitude. The rainfall, which is scanty, occurs chiefly in the summer season. In *Turkestan* there is a wide range of temperature; the summers are very dry and hot and the winters very cold. The climate of *Transcaucasia* is more genial, especially in the southern valleys.

### Productions.

The whole of *Siberia* as far as 60° N. is more or less fit for cultivation, though large parts of this area are either forest-lands or marshy tracts. North of this agricultural region, the chief products are those of the forests, including furs. In the far north are the treeless tundras yielding fossil-ivory. The wealth of

Siberia lies in its abundant minerals. The gold-fields in the east produce three-fourths of the Russian gold; and the country yields silver, iron-ore, lead, copper, graphite, and coal. One coal-field, also containing iron-ore, has an area of over 16,000 square miles in the basin of the Tom.

In *Turkestan* the valleys lying among the eastern mountains are blessed with a black soil, and here agriculture is carried on with success. Among the products are wheat, cotton, and fruits. Cotton is the chief product transported by the Trans-Caspian Railway and is cultivated throughout this region, but chiefly in Ferghana. Camels, horses, sheep, and cattle are abundant.

*Transcaucasia* is a region of forests, vineyards, cornfields, and pastures, but it has also enormous mineral wealth in its coal-fields, and more especially in its petroleum wells in the neighbourhood of Baku.

### People and Industries.

The population may be estimated at 26 millions, of whom about 10 millions are in Turkestan, 9 millions in Siberia, and the remainder in Transcaucasia, which is the most densely peopled area. In *Siberia* the native races are Mongolians, but a large part of the population is composed of Russian exiles and criminals, and Russian peasants who have settled in the country. The mass of the people belong to the Greek Church, but the native Samoyedes are heathen.

In *Turkestan* the people belong to the nomadic pastoral Kirghiz and the warlike Turkomans, most of whom are Moslems.

In *Transcaucasia* the people comprise Georgians, Circassians, Tartars, and Armenians, mostly Christians, although many are Moslems.

The people of *Siberia* are chiefly engaged in mining, agriculture, fishing, or hunting for fur animals. In *Turkestan* besides the pastoral and agricultural industries, there are manufactures of leather goods and

carpets. In *Transcaucasia* the mines and oil-fields give much employment to those who are not engaged on the soil.

## Communications and Trade.

Siberia is traversed by the Siberian Railway begun at Vladivostok, the Pacific terminus, in 1891, and completed in 1902, except for a small portion round the south of Lake Baikal. The Lake Baikal trains were formerly carried by a large train-ferry, but the connexion round the south end of this lake was completed in 1904. The railway for the most part follows the route of the old postal road and passes through the towns of Omsk, Tomsk, Krasnoyarsk, and Irkutsk. The main line branches off above Nerchinsk and runs south-east through Manchuria to the fortress of Port Arthur and the port of Dalny. It is worth noting that the Trans-Siberian route has put London within 16 days' journey of Tokyo and 14 of Peking; while the time taken from Moscow to Vladivostok is about 10 days. This railway is about 6000 miles in length and has cost upwards of £85,000,000.

The Trans-Caspian Railway has done much to promote the commercial development of this portion of Central Asia. It runs from Krasnovodsk on the Caspian, along the base of the mountains in the north-east of Persia, then through the oases of Merv and Bokhara to Samarkand, and thence to Kokan, Margilan, and Andijan in Ferghana, which is 1268 miles from its starting-point.

## Towns.

The chief towns in Siberia lie along the route of the railway and have been already mentioned. The principal towns not on the railway are *Tobolsk*, at the junction of the Irtysh and Tobol; *Yakutsk*, on the Lena, a centre of the fur trade; and *Yeniseisk*, on the Yenisei. *Kiakhta*, on the frontier, opposite Maimachin,

is the seat of a large trade with China, which exchanges tea for furs and other Siberian products.

The capital of Turkestan is *Tashkent*, which has fairs and a large caravan trade. *Samarkand* was the capital of the extensive dominion of Timur. *Merv* and *Khiva* are both situated in fertile oases. *Kokan* and *Bokhara* are well-built towns with increasing trade.

In Transcaucasia, *Tiflis*, on the Kur, is the capital. *Baku* on the Caspian and *Batum* on the Black Sea are engaged in the petroleum trade. *Kars* is a historic fortress ceded to Russia in 1878; *Vladikavkaz* is a railway terminus.

## The Empire of Japan.

### Position and Extent.

The Empire of Japan includes a chain of islands separated from the mainland by the Sea of Japan; the Liu-Kin Islands and Formosa on the south; the Kurile Islands and the southern part of Sakhalin on the north; the peninsula of Korea on the mainland; Kiau-Chau and a number of small islands in the Pacific. The total area of the Empire is 261,000 square miles, including the area of Korea (87,426 square miles). Japan is the European name of this empire; the native name is Nippon.

### Surface and General Features.

The insular empire of Japan may be compared and contrasted with the British Isles. The two kingdoms are about the same size, and have nearly the same population; they are alike in being insular, in being situated near the populous side of the adjacent continents, and in being rich in minerals. The contrast, however, is very great, and this is evident as regards their surface, climate, and productions. The whole

group of the Japanese islands is volcanic and the surface is mountainous and irregular. These islands appear to be the highest portions of a huge chain of mountains rising from a deep ocean bed. The volcanic cone of Fujiyama rises to a height of 12,365 feet, and there are many other peaks nearly 10,000 feet high. Throughout the empire there are solfataras and hot sulphurous springs, and earthquakes are of frequent occurrence. The plains and valleys are highly cultivated, but most of the rivers are short and too rapid for navigation. The harbours around the coast are not numerous, but there are some that are spacious and deep. Navigation in the Sea of Japan is made dangerous by the occurrence of sudden cyclonic storms known as typhoons.

### **Climate and Productions.**

Japan is not in the tropics, but its most southerly island, Formosa, is sub-tropical, with a small range of temperature. The southern portion of Sakhalin is excessively cold for a large part of the year. These are the two extremes; but, on the whole, while the latitude of the main group corresponds to that of southern Europe, the climate is generally colder and more severe, with hot summers in the south and cold winters in the north. At Tokyo, the annual average temperature is about  $57^{\circ}$  F.; in winter the mercury may fall to  $16^{\circ}$  F. and in summer it may rise to  $96^{\circ}$  F. The climate of the south-east coast is somewhat modified by the Kuro Siwo, a warm ocean current. Japan has a heavy rainfall, especially in September and October, when the typhoons occur. Snow falls in most parts and many of the peaks are snow-capped. The mean yearly rainfall of Tokyo is 57 inches.

The irregular character of the surface greatly limits the area that can be cultivated. It is estimated that while one-third of Japan proper is considered productive, only one-eighth is devoted to agriculture. There

is an intermingling of tropical and temperate vegetation, and the tree-fern, bamboo, banana, and palm grow side by side with the pine, oak, beech, and many varieties of conifers. The camellia and the chrysanthemum are indigenous. Rice is the chief agricultural product, and barley, wheat, maize, sugar, and tobacco are grown. The culture of tea is general in the south, and camphor is a very valuable product of the extensive forests. The wild animals are not numerous, and there are few of the larger domestic animals. Cattle are used as beasts of draught and burden, but sheep do not thrive. The silk-worm is largely cultivated; there are extensive fisheries on the coast; and the rivers have abundant salmon and other edible fishes. The mineral wealth is abundant, but needs development. Coal, iron, copper, antimony, and silver are plentiful; petroleum is produced in Honshin and sulphur in Yezo.

## People and History.

Japan, a limited monarchy since 1889, has adopted western methods of civilization and proved both in peace and war its equality with the great Powers of Europe and America. By the Constitution, the Emperor can declare war, make peace, and conclude treaties. There are two Houses forming the Imperial Diet, but it belongs to the Emperor to give sanction to laws, to convoke the Diet, and to open, close, and prorogue it. The population of Japan is about 77 million, and, with the exception of about 12,000 Ainos in the wilds of Yezo, is composed of the Mongolian race. The Japanese are kindly, courteous, law-abiding, cleanly, and frugal, with a high sense of personal honour. The prevailing religion is Buddhism, introduced from Korea in 552 A.D. Education is general and compulsory, and the system of training is singularly complete.

The most important events in recent Japanese history are the successful war with China in 1894, and the amazing triumph over Russia by land and sea in 1904-5.

In the year 1905, Britain concluded a treaty with Japan more thorough than that of 1902, so that Britain and Japan are allies in the Far East for many purposes, such as the maintenance of the "open door" in China. Formosa was ceded by China in 1895, and Korea was annexed in 1910. The people of Korea number about 11 millions, and are of Mongolian origin. Formosa has a population of nearly 3 millions. Japan took an active part in the Great War, and by the Peace of Versailles in 1919 received the German islands in the Pacific Ocean north of the equator.

### Trade and Communications.

Efficiency is the characteristic of the Japanese, especially in matters of production and transport. The first railway was opened in 1872, and in spite of the difficulties of construction owing to the mountainous character of the islands, there are now eleven thousand miles of railway. The first native steamship company was formed in 1874; now Japanese vessels are to be seen in all waters, and some of them have been built in their own ports. External commerce is encouraged, and most of the ports are open to foreign trading vessels.

The chief manufacturing industries are those of silk goods, lacquered goods, porcelain, and metals. Many cotton factories have been established of late years and worked with great success, and paper-mills worked by machinery have been erected. The import of cotton goods was once the chief item, but now the imports of raw cotton and machinery are rapidly increasing. The leading exports are silk, both raw and manufactured, coal, copper, rice, matches, tea and fish. The chief trade is with the United States and China for exports, and with Great Britain for the imports. Restrictions were formerly placed on the commerce of Japan with foreign countries and on the settlement of aliens, but in 1899 the whole country was opened to all foreigners.

## Towns.

*Tokyo*, the capital, on Yedo Bay, has a population of over two millions, and its people are engaged in manufactures of blankets, silk goods, and lacquer ware. *Osaka* is the second Japanese town, with a population of more than one million. It is an open port and the outlet for the manufactures of *Kyoto*, the ancient Japanese capital, and the chief industrial town of the present kingdom. *Yokohama*, the sea-port of Tokyo, is the chief port and residence of European merchants, with steam-ships to Vancouver, San Francisco, Australia, India, and Europe via the Suez Canal. *Nagasaki* has one of the best and most picturesque harbours in Japan. *Seoul*, the capital of Korea, is connected by rail with *Chemulpo*, the chief port.

## China.

### Position and Extent.

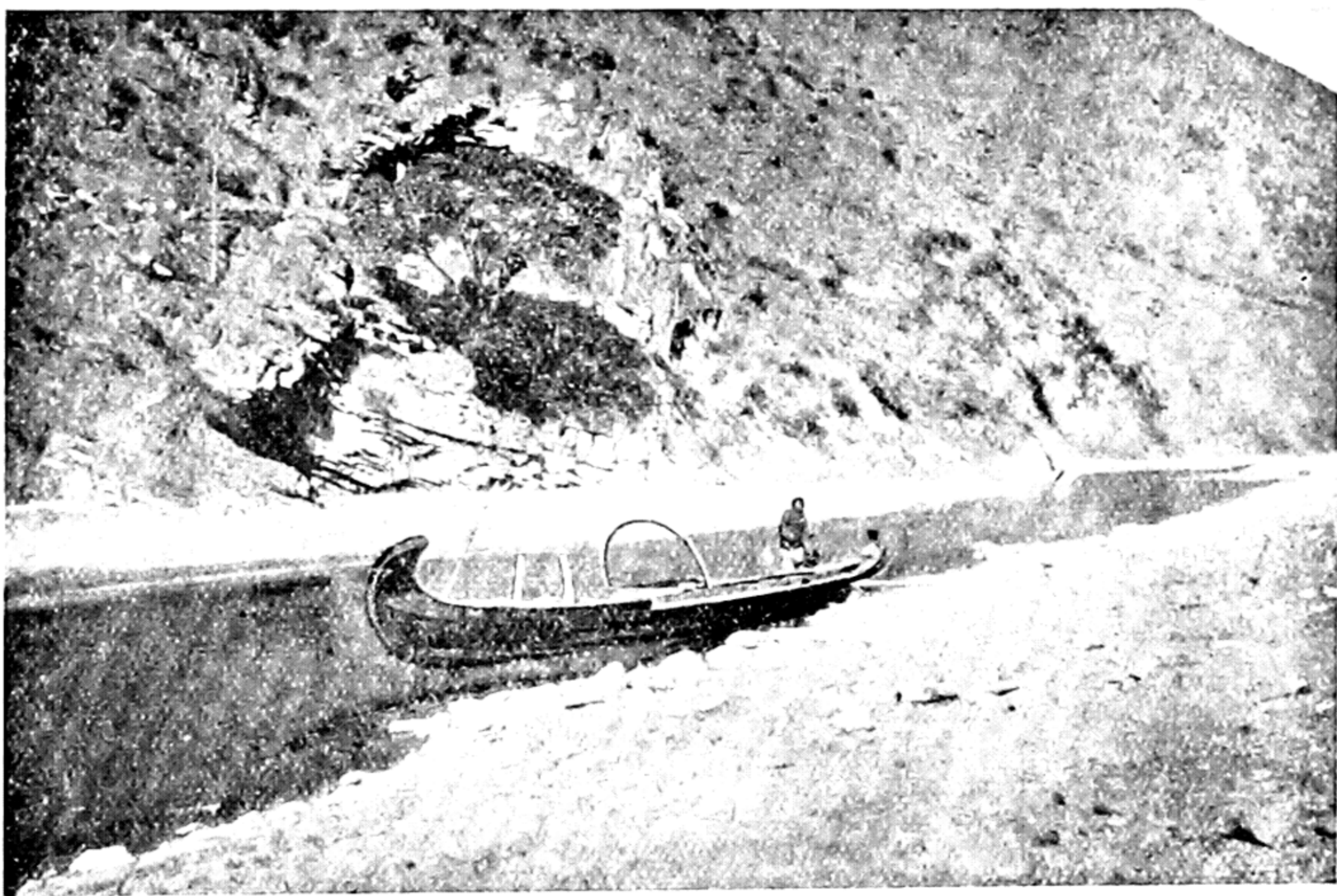
In its widest meaning China comprises China Proper, Manchuria, Mongolia, Tibet, and Eastern Turkestan. The total area of these vast dominions, inferior only to those of Britain and Russia, is about 4 million square miles, and extends from above  $50^{\circ}$  N. lat. to below the Tropic of Cancer, and from  $75^{\circ}$  E. long. to  $123^{\circ}$  E. long.

### Surface and General Features.

*China*, the ancient Cathay, consists of hilly and mountainous country in the south and west and of extensive plains in the north-east. *Mongolia* is a tableland having in the interior the great desert of Gobi. *Tibet* is a lofty tableland rising to a height of more than 17,000 feet. *Chinese Turkestan* is in the Tarim system of inland drainage; the interior of this district is a succession of sand dunes, which are said to be

moving westwards. *Manchuria* has bare mountains in the west and tree-clad mountains in the east.

The river system of China comprises three great rivers, the Hoang-ho in the north, the Yang-tse-Kiang in the middle, and Si-Kiang in the south. These cross the country from west to east, but only the Yang-tse-Kiang is of value for navigation. The



Canoe-boat on a river in China.

*Hoang-ho* is well named "China's sorrow," owing to its great and destructive floods: it is said to have changed its course eleven times in twenty-five centuries. The Gulf of Pechili is now its outlet after its course of 2500 miles. The *Yang-tse-Kiang*, 3200 miles long, is navigable for steamers to Ichang, about 1000 miles from its mouth, but beyond this town for a distance of 400 miles there is a series of difficult rapids. The

*Si-Kiang* is navigable for the greater part of its course, although rapids occur at intervals. The southern part of Tibet is in the valley of the Brahmaputra.

### Climate and Rainfall.

The climate of China depends upon its position on the east side of Eurasia, the world's greatest land-mass, and upon its position within the monsoon regions. The extremes of climate, especially in the north, are very marked, and the average temperature is lower than that of any other country in the same latitude. The January temperature ranges from  $23^{\circ}$  at Peking to  $55^{\circ}$  at Canton, while the July temperature for the same places is  $79^{\circ}$  and  $82^{\circ}$  respectively. The summer rains are the distinguishing feature in the south, where there is a rainfall of more than 70 inches. The China Seas are subject to destructive typhoons or cyclones at certain seasons.

### Productions.

China is very fertile and its northern plain has a peculiar yellow soil, called *loess*, of remarkable fertility. Agriculture is pursued in China with great skill and industry, and the chief products of the country are agricultural. The climate of the country is peculiarly favourable to the pursuit of agriculture, for the warmth and moisture of the summer give great rewards to the husbandmen. In the south, especially near the Canton river, rice, tea, and sugar grow, and the silk-worm is largely reared. Opium poppies are extensively cultivated in western China. The bamboo is among the chief native vegetable products, and the camphor and varnish trees, cassia, mulberry, and sweet orange are distinctively Chinese. Owing to its favourable climate, the southern part of the country is able to produce European cereals as well as cotton.

The wild animals of China include elephants, rhinoceroses, tapirs, leopards, bears, and wolves. Sheep

and goats are bred in the interior, but the Chinese are not a pastoral people. They are, however, good fishermen, and both the inland waters and surrounding seas yield a large supply of fish.

China is rich in minerals and has valuable and extensive coal-fields, which are said to be twenty times as extensive as all the coal-fields of Europe. The principal mines are at Kaiping in the north, but the great coal-fields at present undeveloped are in the interior.

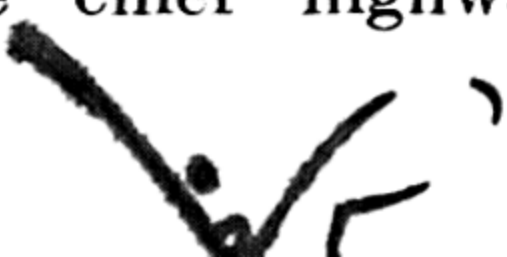
### People and History.

The Chinese are of Mongolian origin and entered this country thousands of years before the Christian era. The population is estimated at 400 millions, and parts of China Proper are among the most densely peopled in the world. On the other hand, the outlying dependencies are thinly peopled. The prevailing religion is Buddhism, but Confucianism has many adherents. Mohammedans are numerous and Christianity has made good progress.

In recent years, China has claimed much attention from European Powers and Japan. The latter power as the result of a war in 1894 secured Formosa, and after the war with Russia in 1905 gained some of the Russian settlements in China. Germany obtained a footing in China in 1894 by the cession of Kiao-Chou, which it lost to Japan in 1914, and Britain as an offset received Wei-hai-wei in 1898. The reactionary "Boxer" riots of 1889 were anti-foreign in their origin. The revolution of 1911 overthrew the imperial dynasty, and in 1912 China became a Republic with a President, Vice-President, and a National Council.

### Communications and Industries.

The canal and road systems of China are extensive and complete, but, as a rule, badly maintained. The rivers are the chief highways of commerce; the



building of railways is now sanctioned and lines are being laid in all directions. The electric telegraph now connects the remotest inland cities with the capital.


The foreign commerce of China is not large in proportion to the population. This is due to several causes, especially to the Chinese jealousy of foreigners, whose merchants and shipping are restricted to the treaty ports, of which Shanghai and Canton are the most important. The largest part of British trade is centred at Hong-Kong, the great entrepôt for southern China. Chinese industries are only for the home market. Silk is woven and cotton goods are manufactured. The paper and porcelain industries are of less importance, and they are carried on in the same way as in remote ages.

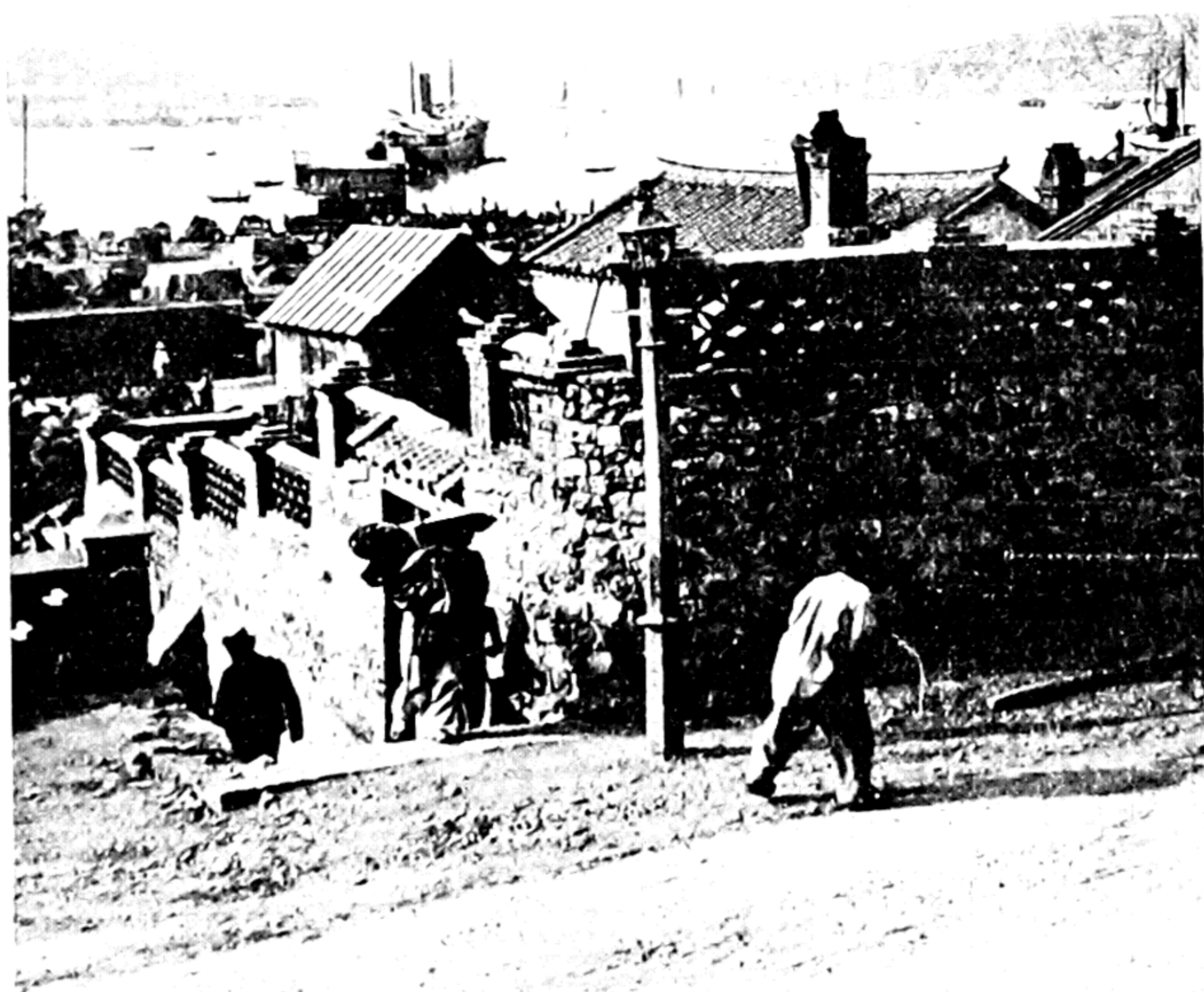
## Towns.

In China Proper, *Pekin*, on the Peiho, is the capital, with a very large population. It was occupied by the allied European Powers in 1900 owing to the anti-foreign outrages. It is connected by rail with *Tientsin*, its port, near the mouth of the river. *Shanghai* is the most important harbour, near the mouth of the Yang-tse-Kiang. It has a large European settlement, and is the centre of the foreign trade, especially that in opium and silk. *Canton* is said to be the most populous city in China. It stands on the Canton river, on which a large portion of the people live in house-boats. Canton has manufactures and is the oldest treaty port. *Fuchow* is one of the chief tea-exporting towns.

In Manchuria, *Mukden* and *Kirin* are the chief towns and can be reached by steamers. *Port Arthur* is a strong fortress taken by the Japanese from the Russians in 1905.

In Mongolia, *Maimachin* is one of the chief seats of trade between China and Russia.





The harbour of Port Arthur.

In Eastern Turkestan, *Kashgar* and *Yarkand* still maintain a caravan trade with China, and are also the centres of the trade that crosses the Pamir tableland.

In Tibet, *Lhasa*, the capital, situated 12,000 feet above sea-level, is the residence of the Grand Lama, the head of a peculiar form of the Buddhist religion. Lhasa was entered by a British force in 1904, no European having been there since 1846.

## Hong-Kong.

Hong-Kong is a British island on the east side of the Canton river. Its area is only 29 square miles and consists mainly of a rugged ridge of granite rocks. The island has a magnificent harbour, which stretches between Hong-Kong and the peninsula of Kowloon on the mainland. The fact that Hong-Kong has this excellent free port has determined its importance as the commercial entrepôt of eastern Asia generally and of China in particular. Hong-Kong is the seat of a British governor and is a British naval station. It came under British rule in 1841, and in 1861 the peninsula of Kowloon, now under the administration of Hong-Kong, was ceded by China. *Victoria*, the capital, is one of the finest cities in the East. The exports and imports consist of tea, silk, hemp, and copper from China, and of British textile goods, opium, and iron goods to China. The population of Hong-Kong is about 366,000 of whom more than 350,000 are Chinese. In 1898, China leased to Britain an area of 376 square miles, with the waters of Mirs Bay and Deep Bay and the island of Lan-tao. The population of the New Territories is 91,000.

## Siam.

### Position and Extent.

Siam occupies the central portion of the Indo-Chinese peninsula, the main body lying between Burma and French Indo-China. The area of the Kingdom of Siam is about 195,000 square miles, of which 45,000 square miles are in the Malay Peninsula.

### Surface.

The Menam valley and the Korat plateau occupy the larger part of the country. The Menam, 600 miles long, is the principal river, and is navigable for steamers only to the confluence of the two chief head-streams. The Mekong has the main part of its course in or along Siam, but rapids impede navigation.

### Climate and Productions.

The climate, though hot and moist, is considered healthy for the tropics ; Europeans suffer from malarial fever. The two seasons are the wet and the dry, the former lasting from May till November. The average temperature is 81°.

Only the land adjoining the river is under cultivation, and much of the country is covered by jungle. The chief production is rice, which forms the national food and brings much wealth to the country, for it is the staple export. The other products are teak-wood, pepper, salt, and oil-seeds. The labour market is supplied by Chinese coolies ; the commerce is in the hands of Chinese ; and the best artisans are also Chinese. The wild elephant, tiger, bear, monkey, and squirrel abound in the jungles. Tame elephants are used for purposes of draught, and the famous "white elephant" is kept in the grounds of the royal palace at Bangkok. Crocodiles are found in the rivers, and the python, cobra, mosquitoes, and tropical insects are abundant. Gold,

tin, and coal are found, and rubies and sapphires are common in some districts.

### People.

The Siamese number about one-third of the population of 8 million. The Shans occupy the north and east, and Chinese, Malays, Burmese, and Indians are numerous. The Siamese are peaceful, indolent, vain, and fond of gay dresses and jewellery. The religion of the country is Buddhism. The legislative power is vested in the king, who has a council of ministers and a council of state. Siam is at present free from European control. Railways are extending, and some Western modes of business are being introduced.

### Town.

*Bangkok*, the capital, is on the Menam. It has a large population, many of the people living on the river in floating dwellings.

## The Malay Peninsula.

### Position and Extent.

The Malay Peninsula is that part of Indo-China which projects south-eastward nearly to the equator. It is partly under British rule and partly divided among a number of small states which owe allegiance to Siam and to Britain. The portion belonging to Siam in the north has already been considered; the native states belonging to Britain are Perak, Pahang, and Johor. The British Straits Settlements include the island of Singapore in the extreme south, the territory of Malacca on the west, the island of Penang, and Province Wellesley.

### Surface and General Features.

The peninsula is mountainous and the chief range rises to 8000 feet. As the watershed is in the central

portion, the rivers are short. The surface is undulating, with dense forests, and in the lower parts there are swamps and marshy districts.

### Climate and Productions.

The climate is hot and moist, and the temperature



The port of Singapore.

varies little throughout the year. The rainfall is abundant, both the north-east and south-west monsoons bringing rain. The chief export is tin; the mountains running through the peninsula are the richest part of the world in this metal. Gutta-percha, spices, gambier, and gum are also plentiful.

## People.

The natives of the peninsula are Malays, but they are being supplanted in trade and industry by the Chinese and Indians, the latter being known as Klings. The Portuguese were the first Europeans in the Malay Peninsula, and settled in 1511 at Malacca, which was captured by the Dutch in 1642. The East India Company occupied Penang in 1786 and Province Wellesley in 1800. Singapore, Malacca, and Penang became the Straits Settlements in 1826, being administered by the East India Company till 1867, when they became a Crown Colony.

## Towns.

*Singapore*, the capital of the Straits Settlements, is a fortified seaport. It has a fine free harbour and is the centre of commerce for the East. *Malacca*, once the chief seaport, has declined, owing to the importance of Singapore and Penang.

# French Indo-China.

## Position and Extent.

French Indo-China extends along the left bank of the Mekong and thus occupies the eastern part of the peninsula. It has an area of 286,000 square miles and comprises Tong-king, Annam, Cochin China, and Cambodia. The French, who obtained an entry in Cochin China in 1862, have since gradually extended their possessions in Indo-China.

## Surface and Productions.

Cochin China and Cambodia are mainly low alluvial land formed by the floods of the Mekong; but Tong-king and Annam are highland regions rising to heights of from 4000 to 9000 feet. The coast-line is extensive and regular but with no good harbours. The Mekong

is the longest river and after a course of 1800 miles forms a great delta. The climate is tropical, and in Tong-king there is heavy rain after May, when the rivers are flooded.

The chief production is rice; the uniformity of the seasons and the yearly inundations are favourable to its growth. There are forests of teak, ironwood, and lacquer trees, and silk, cotton, and oils are produced. There are large mineral resources; coal is largely mined, and there is a good deal of gold, iron, and copper.

### People and Trade.

The people belong to three groups of the Mongolian race—the Annamites, the Cambodians, and the Lao people and the inhabitants of the Shan States. The population is very dense in Tong-king. The Chinese have a monopoly of the trade.

### Towns.

*Saigon*, the capital of Cochin China, is an important and attractive seaport. *Hanoi*, the capital of French Indo-China and of Tong-king is on the Red River. *Haiphong* is the chief port of this province. *Huë* is the capital, and *Turan* the port, of Annam.

## The Malay or the East-Indian Archipelago.

### Position and Extent.

The Malay Archipelago is a name given to all the islands westward from 92° E. long. as far as New Guinea. For the most part the islands belong to European Powers, and by far the larger portion is in the hands of the Dutch, who own Sumatra, Java, Celebes, the greater part of Borneo, the Lesser Sunda Islands, and the Moluccas. The whole of northern

Borneo is under British protection and the north-east of Timor is Portuguese. The Philippine Islands, formerly Spanish, have belonged to the United States since 1898. The area of the Malay Archipelago is estimated at 783,000 square miles.

### Surface and General Features.

As regards the physical character, this extensive island group may be considered in two divisions. The first section extends to about 118° E. long. and rests on a submarine plateau not more than 50 fathoms deep; while the second section has a very deep sea as far as New Guinea. These facts were first noted by Wallace, and the dividing-line is consequently known as "Wallace's Line." The whole of the islands are mountainous, and a chain of volcanic cones, some extinct or dormant and others very active, may be traced round the group from Sumatra eastward to the Philippines. In no equal area of the world are there so many volcanoes as in Java, where the highest summit reaches 12,000 feet. Krakatau, the most notable, is memorable for its remarkable explosion in 1884. Celebes has a most singular configuration which shows four mountainous peninsulas radiating from a high central region. Some of the islands, such as Java, have low coasts with mangrove swamps.

### Climate and Productions.

The climate is hot and moist, but with the exception of the Philippines, the Archipelago is not subject to extremes. The northern portion of the Philippines is in the region of typhoons. The wet and dry seasons alternate regularly on either side of the equator for about five degrees. The wet season lasts from November to March on the south of the equator, with a corresponding dry season on the north.

The soil of the islands is very fertile and the vegetation is tropically luxuriant. In point of production Java is the most important; for its natural advantages

are the rich volcanic and alluvial soil and facilities for irrigation. The islands are singularly rich in animal life, and "Wallace's Line" separates the



Java: a volcanic mountain, with coco-nut palms in foreground.

islands having Asiatic and Australasian forms of life. On the west side of this line palms, bananas, laurels, and oaks are found, and monkeys, tigers,

rhinoceroses, and elephants abound; while on the east side the mammals just named are absent and their place is taken by marsupials. The Australian character of the flora on the east side is evidenced by the presence of the eucalyptus, acacias, and cycads. In Java, coffee is the chief product, but tea, cinchona, and sugar-cane are cultivated. Sumatra cultivates tobacco, Celebes coffee and cacao, the Moluccas spices, Sarawak sago, and the Philippines hemp, sugar, tobacco, and copra.

### People and Industries.

The population of all these islands is estimated at 40,000,000, of whom at least three-fourths belong to the Dutch islands. The natives are mostly Malays and Melanesians, the former predominating in the islands west of "Wallace's Line," and the latter occupying the eastern islands. The Malays are generally Mohammedans and the Melanesians pagans.

The chief native industries are mining and forest and agricultural pursuits; but there is also some carving of wood, metal, and ivory. In British North Borneo there is, besides coal, a gold-field, and Labuan has coal deposits. Water communication is by means of junks. Railways, however, are extending on some of the islands; a network of lines from end to end of Java, and a line starting from Manila running through the hemp and sugar districts, are signs of progress.

### Towns.

*Batavia*, in Java, is the capital of the Dutch possessions, and has a trade similar to that of Singapore. A new harbour has been built at Tanjong Prick, and to the south is Buitenzorg, having a sanatorium and the seat of the Governor-General of the Dutch East Indies. *Makassar*, in Celebes, has a fine roadstead and is a place of commercial importance. *Manila* is the capital of the Philippines.

## British North Borneo and Labuan.

The whole of North Borneo, consisting of a portion belonging to the British North Borneo Company, of another portion belonging to the Sultan of Brunei, and of Sarawak, is under British protection. The area is about 77,000 square miles. The soil is suited to the growth of tobacco, sago, and cotton, but the chief articles of commercial value are tobacco, timber, rattans, gutta-percha, camphor, and rubber. Sarawak is said to supply more than half the total sago produce of the world, and gold, diamonds, and coal are among the natural products of this district. *Labuan*, a small island to the west of Brunei, is a British Crown Colony, having a good port and some coal deposits. Since 1907 it has been incorporated with Singapore.

## India.

### Position and Extent.

India comprises the great peninsula between the Arabian Sea and the Bay of Bengal, and the strip of country bounding that bay on the east. The area is about 1,800,000 square miles, or fifteen times that of the British Isles. Its boundaries are natural frontiers and mark it off as a separate region. The Himalayas, the loftiest mountains in the world, form the northern boundary; mountains and deserts bound it on the west; lofty mountains and deep valleys are on the east and north-east: and the sea is the boundary to the other parts of this great peninsula.

The greater part of India is under the direct rule of Britain, and the remainder is almost entirely subject to native princes who are under British control or influence. Portugal has retained Goa, a small district on the west coast, and Daman and Diu, on opposite

sides of the Gulf of Cambay. France has Pondicherry and Carical on the Coromandel coast, Yanaon on the delta of the Godavari, Chandernagore above Calcutta, and Mahê on the Malabar coast.

## Surface and General Features.

India may be considered from a physical point of view as consisting of four well-defined regions : (1) the northern mountain region ; (2) the great northern plain of the Indus, Ganges, and Brahmaputra ; (3) the tableland of the Dekkan ; and (4) Burma.

1. The northern mountain system, springing from the Pamir Plateau, consists of the Hindu Kush mountains, continued in the Sulaiman Range and the Himalayas. The *Hindu Kush* have an average height of about 6000 feet ; the highest peak, Takht-i-Sulaiman, is 11,500 feet. These mountains are crossed by several passes which are thus important trade-routes for this region. The best known are the Khaibar, the Gumal, and the Bolan.

The *Himalayas* consist of two parallel ranges which form the northern boundary of India for 1500 miles. The short Karakoram range is on the north of Kashmir, a most mountainous state. The Himalayas have an average elevation of 18,000 feet, and the loftiest peaks are Mount Everest (29,000 feet), Kanchinjanga (28,146 feet), and Dhaulagiri (26,800 feet). The second highest mountain in the world is Mount Godwin-Austen (28,260 feet), in the Karakoram Range.

2. The great northern plain stretches across the north of India, having the Vindhya range for its southern boundary. This immense area is watered by the Indus, the Ganges, and the Brahmaputra, which rise within a short distance of each other in some elevated lakes on the north of the Himalayas. The *Indus* flows for 500 miles before turning south into India. It has only one considerable tributary, the Kabul, on the right bank, but on the left bank it

receives the five rivers of the Punjab—the Chenab, Sutlej, Jehlam, Ravi, and Bias. The Indus after a course of 1800 miles enters the Arabian Sea by a delta. The *Ganges* is in many respects the most important river of India. Its course of 1500 miles is through a thickly peopled region which was the home of an ancient civilisation, and for the greater part of its length this sacred river of the Hindus is navigable. Its tributaries—Jumna, Gumti, Gogra, and Gandak—



Morning on the Ganges.

drain the Himalayan region, and owing to the monsoon rainfall and the melting of the mountain snows, the whole area is very efficiently irrigated. Indeed the Ganges valley owes its fertility to the silt which is brought down and deposited in its valley. The delta of the Ganges known as the Sandarbans, is of considerable extent and has the Hugli as its chief mouth. The *Brahmaputra* becomes an Indian river after it has broken through the mountains of Assam.

It flows south-west for some distance, then bends to the south and joins the delta of the Ganges.

3. The Dekkan is a triangular tableland which covers the whole of India within the tropics. It is bounded on three sides by mountains—the Vindhya and the Satpura mountains on the north, and the Ghats on the west and east. The Nilgiri Hills are a continuation of the Ghats to the south. As the general slope of the Dekkan is from west to east, most of the great rivers flow to the Bay of Bengal. The chief of these are the Mahanadi, Godavari, and Kistna; the Tapti and Narbada flow to the Arabian Sea. It is noteworthy that the rivers of the Dekkan are not so useful for irrigation and navigation as those of northern India. They have long courses on the tableland, a short descent through mountain gorges, and then flow to the sea with deltas at their mouths.

4. Burma is a mountainous country and its ranges are a continuation of the Himalayas. The rivers run in parallel valleys, and, owing to the heavy rainfalls and the melting of the snow on the mountains, they are all useful for irrigation. The Irawadi is navigable for 800 miles and is the commercial highway of Burma.

## Coasts.

The coast-line of India is very regular, and, although 5000 miles long, it has only four large openings into the land. The Rann of Cutch is very shallow; the Gulf of Cambay has no good harbour; the Gulf of Manaar is very shallow at the northern end; and the Gulf of Martaban, with the port of Rangoon, is the only opening that is used for commercial purposes. The west, or Malabar, coast, is rocky, but has a few good harbours—Bombay, Goa, and Cochin. The east, or Coromandel, coast, is low and much surf-beaten. The only important harbour is Madras. There are few islands near the coasts of India. Ceylon, with some islets, is the chief. The Laccadive and Maldive Islands are of coral formation, and the Andaman and Nicobar

Islands are part of a submarine ridge. The Mergui Archipelago is at the south of Burma.

### Climate and Rainfall.

The climate is tropical at sea-level, but the air on the hills is much cooler. The Indian year has three seasons—the hot, from March to May; the rainy, from June to October; and the cool, from November to February. The highest temperature is in the middle of the Dekkan, but a temperature of  $120^{\circ}$  in the shade is often experienced in the vicinity of the Bolan Pass. The coolest parts of India during the hot season are Malabar and Assam. The rainy season synchronises with the south-west monsoon, and during this period the western slopes of the Western Ghats, Assam, and the plains of the Ganges are deluged with rain. The rainfall increases from west to east, from 30 inches in the basin of the Indus to 120 inches at Darjiling and over 500 inches in Assam. The plains in the north-west have a very moderate rainfall, and much of the Indus valley is almost rainless. During the south-west monsoon the Arabian Sea and the Bay of Bengal are subject to cyclones, the most dangerous occurring at the beginning and end of the rainy season.

### Productions and Agricultural Resources.

India is essentially an agricultural country and at least three-fourths of its people depend on the fruits of the earth. As agriculture is such an important industry, the greatest care is bestowed upon it and on providing and improving the means of irrigation. Millet is cultivated throughout India, and rice is grown in the plains of the Ganges and on the river deltas round the Bay of Bengal. Rice is the staple food of more than 90 million people and Bengal grows more than half the entire Indian crop. Wheat is the chief food-grain produced in the Punjab and the North-west and Central Provinces. Cotton is the chief industrial plant and is mainly grown on the

southern tableland and the plains of Gujarat. Bombay and Cawnpore are the great cotton centres. Jute is grown on the rich plains of Bengal, and Calcutta is the centre for its collection and export. Tea-growing has its headquarters in the valleys of Assam and the north-east. Indigo, formerly more important, is still a valuable crop in Bengal and the north of India. Opium cultivation has its chief seats in the Ganges valley, especially at Patna and Ghazipur, and in Malwa in Central India. Among the other cultivated plant productions, cinchona, hemp, flax, coffee, and oil-seeds are of importance. There is a good deal of forest-land in India, and the most valuable wood is teak, obtained from Burma and the Western Ghats. The sal, another valuable timber tree, is found in the forests of the Central Provinces and along the Himalayas, while the coco-nut, date-palm, sandal-wood, deodar, india-rubber tree, banyan, mango, ebony, plantain, and bamboo are all found in various parts of India.

Wild animals are numerous, and the elephant, tiger, monkey, and many kinds of deer are found in the jungles. The rhinoceros is found in Bengal, Assam, and Burma, the lion in Gujarat, and the wild ass in Sind. Birds of gay plumage are common and the peacock and the jungle-fowl are indigenous. Crocodiles abound in many of the rivers, the python is found in all parts, and poisonous snakes are common. Besides the ordinary domestic animals, the buffalo is often seen. The bullock is generally used for agricultural work, and the horse, ass, camel, buffalo, elephant, and yak are the other beasts of burden.

### Mineral Resources.

The mineral wealth of India is not very great. There are some coal-fields in Bengal and Central India, but Indian coal is inferior to the English coal, which is sent to Bombay and Madras. Iron-ore is plentiful but little worked. Gold, copper, and diamonds in Central India, rubies in Burma, tin in

Tenasserim, and petroleum in Burma are the other minerals of importance. Salt is obtained by evaporation all round the coast and from inland salt lakes.

### People, Races, Languages, and Religion.

The people of India are of many different races, and the highest and lowest types of mankind are to be found among them. At least four races can



Buddhist lama with disciples.

be distinguished: the *Kolarians*, or the aboriginal tribes, scattered to the north of the great plain; the *Dravidians*, occupying Southern India and part of the Dekkan; the *Aryans*, who form the bulk of the population; and the *Tibeto-Burmans*, who are Mongolians and inhabit Burma and the countries bordering on Tibet.

There are more than 80 distinct languages in use in India, but the following are the most important—

Hindi, Bengali, Marathi, Gujrati, Tamil, Uriya, and Punjabi, all of which are of Aryan origin and can be traced to Sanskrit. About three-fourths of the people profess the Hindu religion, the most striking feature of which is the caste system. Mohammedanism, professed by one-fifth of the people, is the prevailing religion in the north-west and in Eastern Bengal. Buddhism, once more prevalent, is followed by the people of Burma, Sikkim, and Kashmir. Animism or fetish worship is practised among the forest races of the centre and south of the peninsula. Christianity has nearly 4,000,000 adherents, chiefly in southern India. Among the other religious bodies are the Sikhs, Parsis, Jains, and Jews.

The total population of India is 319,000,000, or seven times that of the British Isles. This population is very unequally distributed; large portions of Lower Bengal and Bihar are densely peopled, and there are crowded districts in the Ganges basin, southern India, and the coast plains. The least populated regions are the hills of Central India and the deserts of Rajputana.

## **Manufactures and Industries.**

It has been already noticed that agriculture is the leading industry and gives employment to the majority of the people. Industries using steam or electric machinery are of increasing importance, and there are cotton mills, jute mills, paper mills, and woollen mills. The villages of the north and the native states of the Dekkan are celebrated for the beautiful and delicate cotton and silk fabrics woven in native dwellings. Jute-weaving and the making of gunny bags by hand are carried on in north-eastern Bengal. Carpets and shawls are still made in Kashmir and the Punjab, and silk-weaving is also practised in various towns. India is also famous for its production of jewellery, metal-work, and ivory goods.

## Trade and Commerce.

The trade of India is a remarkable example of the exchange of agricultural produce for manufactured goods and minerals. The reasons for this will be gathered from the preceding pages. India is essentially an agricultural country, and so the agricultural products are those of which there is a superfluous supply for exports; and as the manufactures are little developed, minerals and manufactured goods are needed. The leading exports are jute and jute goods, rice, seeds, raw cotton, hides and skins, tea, opium, wheat, and indigo. Among the imports cotton goods are the most important, but metals, machinery, sugar, woollen goods, and coal are of considerable value. The bulk of the foreign trade is with the United Kingdom, and the chief seaports engaged in the trade are Calcutta, Bombay, Rangoon, Madras, Tuticarni, and Karachi. The little landward or trans-frontier trade is carried on chiefly with Tibet via Darjiling and Kashmir, and with Afghanistan and Persia through the Khaibar and Bolan Passes.

## Communications.

India has excellent main roads in all parts and numerous branch roads. The natural highway of the north is the Ganges and its tributaries, but the flatness of this region has facilitated the construction of railways. The Grand Trunk Road from Calcutta to Peshawar is over 1500 miles long. There are upwards of 36,000 miles of railway in India, and the great railway systems run inland from Calcutta, Bombay, Madras, Karachi, and Rangoon. The railway systems of the north and north-west converge on Delhi. At present there are only three places where the Western Ghats are crossed by railways: at Thal Ghat, at the Bhore Ghat, and between Dharwar and Goa. In the extreme south of India there is a depression which affords a passage for the railway between

Calicut and Madras. Rivers and canals are used for navigation, and of the former the Ganges, Brahmaputra, Irawadi, and Indus are most used, and of the canals the Buckingham Canal, a salt water channel on the east coast, and the Ganges Canal from Hardwar to Cawnpur are the chief.

### Administration.

The King of England, as Emperor of India, rules this Empire through the Secretary of State for India with a special Council in England, and the Viceroy or Governor-General with his Council in India. Under the Act of 1919 the Indian legislature consists of the Governor-General and two Chambers—the Council of State and the Legislative Assembly. For purposes of administration India is divided into provinces, which are ruled by Governors, Lieutenant-Governors, or Chief Commissioners. The Native States are under the control of their own princes or rajahs, with British Residents or Agents to watch over British and native interests. Nepal and Bhutan are Independent States.

### History.

Before the establishment of British supremacy, the history of India is largely a record of internal strife, with various foreign invasions from the northwest. The conquests of Darius of Persia about 500 B.C. and of Alexander the Great in 323 B.C. are merely matters of historic interest, as they left no mark on the future destiny of the country. The invasion of the Mohammedans in the tenth century of the Christian era was most momentous, and successive invaders, such as Genghiz Khan, Timur, Babar, and Akbar, were the means of establishing the Moghul Empire, which, at its greatest glory, extended to the southern boundary of the Dekkan. Akbar was a contemporary of Queen Elizabeth, and on the last day of June, 1600, a charter was granted to the East India Company for trading in India and the Indian

Seas. In 1613 the English were allowed to establish a "factory," or trading station, at Surat, and in 1639 another at Madras. In 1662 Bombay came into the possession of the English, and in 1690 Fort William, or Calcutta, became a centre of English activity. The last of the great Moghul Emperors died in 1707, and from that time the Empire broke up into a collection of monarchies which owed little allegiance to the Moghul at Delhi. The French had established some trading stations in India, and about 1740 there began a great rivalry between the English and French for mastery in India. The battles of Arcot in 1751 and Plassey in 1757 were the turning-points in favour of British supremacy. Clive, Warren Hastings, Wellesley, Amherst, Bentinck, Dalhousie, and Canning are some of the great British governors who consolidated the Empire of India for the British. After the suppression of the Indian Mutiny the government of India, previously in the hands of the East India Company, was definitely assumed by the Crown in 1858. Since that time no great annexation of territory has resulted, except that of Upper Burma in 1886. The policy of Britain has been to secure a scientific frontier on the north-west, and to organise and administer the government in the best manner for the progress and prosperity of India.

## British Provinces and Towns.

### Bengal.

*Calcutta*, the former capital of India, is on the Hugli, 86 miles from the sea. It has a population of more than one million and is the first port in India. Of late years mills have been built and it is becoming a manufacturing centre, especially at one of its suburbs, Howrah.

### Assam.

*Shillong* is the seat of government.

**Bihar and Orissa.**

*Patna*, the chief city, has a position of great natural advantages near the junctions of several rivers.

**Ajmer-Merwara.**

*Ajmer* is the chief city.

**Andaman and Nicobar Islands.**

*Port Blair* is the residence of the Chief Commissioner.

**Coorg.**

The Resident at *Mysore* is the Chief Commissioner.

**The United Provinces of Agra and Oudh.**

*Allahabad*, the capital of Agra, has an important position at the junction of the Ganges and the Jumna. It is a sacred city with an annual religious fair. *Cawnpur* is an important manufacturing and railway centre. *Benares* is the most sacred city of the Hindus and has many temples. *Agra*, formerly one of the Mogul capitals, has much trade. It is famed for its magnificent buildings, especially the Taj Mahal, one of the most beautiful monuments in the world. *Lucknow*, the chief city of Oudh, has several historic buildings, notably the Residency, associated with its siege in 1857.

**Delhi.**

*Delhi*, the most historic city in the north of India, became a province and the capital of India in 1911. It is a great commercial town and an important railway centre, for six railways converge to this city. Its industries are important and some of its buildings are magnificent.

**Punjab.**

*Lahore*, the capital and the seat of a university, is growing rapidly as a commercial and industrial centre. *Rawal Pindi* is the most important military centre in northern India. *Simla*, a hill-station, is the summer capital of India.

### The North-West Frontier Province.

*Peshawar* is a great military station and commands the Khaibar Pass. Most of the towns, such as *Bannu*, *Kohat*, and *Chitral* are military outposts.

### Bombay.

*Bombay*, the capital of this province, is the second city and seaport in India. It has the best harbour



Delhi: colonnade of a mosque built in the 13th century.

on the west coast and is important as being the port at which the European mails enter and leave India. The city is built on an island, and the caves of Elephanta are of much interest. Bombay has many industries, especially cotton, and its public buildings are very fine. *Ahmadabad* is the second town in this province and has increasing trade and manufactures. *Poona*, a great railway station, is the summer seat of govern-

ment for Bombay. *Haidarabad* was the former capital of Sind. *Karachi* is a seaport of increasing importance.

### Central Provinces and Berar.

*Nagpur*, the capital, is an ancient city with some importance as a commercial centre.

### Madras.

*Madras*, the third city in India and the capital of this province, has a harbour which is unsafe in violent storms. It has a university, and its observatory gives the "standard time" for the whole of India. *Trichinopoli*, the second town of the province, has manufactures of cigars and jewellery. *Calicut*, on the west coast, was visited by Vasco da Gama in 1498. It gave its name to "calico."

### Burma.

*Rangoon*, the capital, is an important port with a large foreign trade, especially in the export of rice and teak. *Mandalay* is the capital of Upper Burma, and *Ava* was one of the ancient capitals.

### Baluchistan.

*Quetta*, a very important military station, is the residence of the Chief Commissioner; it is also the centre of the caravan trade with Persia. *Kalah*, 84 miles south of Quetta, is the capital of the Khan of Kalat's territory.

## Native States and Towns.

### Kashmir.

*Srinagar* is the capital and only large town. It stands on the Jhelum in the middle of the Kashmir valley.

### Rajputana.

*Jaipur*, the largest city, is modern, with spacious streets. *Ajmere* is the residence of the British Agent for this province.

**Central India.**

*Gwalior*, the capital and largest town in Central India, stands on a rock fortress of great natural strength. *Indore* is the residence of the British Agent.

**Haidarabad.**

*Haidarabad* is the capital and one of the largest cities in India. *Secunderabad* has the largest military garrison in India. *Golkonda* was formerly famous for its diamond cutting and polishing.

**Mysore.**

*Mysore* is the capital and the residence of the Maharajah and the British Resident. *Bangalore*, the largest city, is a military station and a commercial centre.

**Baroda.**

*Baroda*, the capital, has considerable trade.

**Independent States and Towns.****Nepal.**

*Khatmandu* is the capital and the residence of the British Agent.

**Bhutan.**

*Punakha*, the capital, is merely a mountain village.

**Ceylon.****Position and Extent.**

*Ceylon*, although separated by Palk Strait and the Gulf of Manaar from India, geographically belongs to the peninsula and is connected with it by Adam's Bridge—a number of rocks and sandbanks. The area is rather more than 25,000 square miles, or about half that of England.

## Surface and General Features.

The northern part is low, but the southern part is mountainous. Pedrotalagala (8296 feet) and Adam's Peak (7353 feet) are the highest peaks. The coast is generally regular; there are no large rivers but numerous streams flowing from the mountains.

## Climate and Productions.

The climate is tropical—warm, moist, and equable. The south-west monsoon blows full on Ceylon, which is 6° above the equator at the most southerly point. Most of the island is fertile and the forests produce valuable timber, especially satin-wood and ebony. Cinnamon is also an important product. The crops cultivated are tea, rice, spices, oil-seeds, cacao, rubber, and cinchona. Plumbago, gems, and iron are found, and the pearl fisheries are of importance.

## People and Industries.

The natives are mostly Singhalese, but there are many Tamils. More than half the people are Buddhists; the rest are Hindus, Christians, and Mohammedans. The cultivation of coffee was formerly the great agricultural industry, but of late years tea has taken its place. Most of the trade is with India and the British Isles. A railway runs through the tea districts from Colombo to Kandy, and another from Colombo through Galle to the south of the island.

## Government and Towns.

Ceylon is a Crown Colony under a Governor, who is assisted by two councils. The Maldivé Islands, 500 miles west of Ceylon, are a dependency of this island. The Portuguese reached Ceylon in 1505; they were driven out by the Dutch in 1640; and the British expelled the Dutch in 1796.

*Colombo*, the capital, is one of the most important ports of call in the world for passengers travelling



A tea estate in Ceylon.

to India, China, and Australia. The harbour, though artificial, is easy of approach at all times. *Kandy* is the old capital, beautifully situated on the highland interior. *Trincomali* has a fine harbour, but its situation causes it to be of little value for trade.

## Afghanistan.

### Position and Extent.

Afghanistan is the north-eastern portion of the Iranian plateau and extends from north to south for 500 miles, while its length from the Herat frontier to the Khaibar Pass is 600 miles. The area is estimated at 245,000 square miles. The surrounding countries are the Central Asian States, under the influence of Russia, in the north; Persia on the west; Baluchistan on the south; and the North-West Frontier Province of India on the east.

### Surface and General Features.

Afghanistan has been described as "a drab-coloured land, one of the waste places of the world. Sand, bare rocks, sterile hills, and vast snow-topped mountain ranges are the main features of this inhospitable country." The principal mountain systems are the Hindu Kush and its westerly continuations, and the whole country is within the three great river-basins of the Oxus, the Indus, and the Helmand (700 miles).

### Climate and Productions.

The climate is as diversified as the physical configuration. Thus at Ghazni the winter is very rigorous, while parts of the interior have the hottest summers on the continent. The south-west is swept by a very hot wind in the summer, and generally the climate is dry.

Among the characteristic productions of Afghanistan are the asafoetida plant, the castor-oil plant, and the tobacco plant. Fine crops of wheat, barley, cotton, grapes, and melons are grown round Herat, and in some localities are forests of pistachio.

### People and History.

The population may be estimated at six millions. The dominant race are the Durranis and the most numerous the Ghilzais; then follow the Tajiks, Hazaras, and Uzbaks. The Afghans are mainly Mohammedans and are ruled by the Amir. In character they are proud, vain, cruel, and revengeful, and it has been remarked that "nothing is finer than their physique or worse than their morals."

The early history is involved in obscurity, but the country, after having been in the hands of Persia for two centuries, became an independent state in the middle of the eighteenth century. During the last 50 or 60 years, the country has been of considerable interest and its history has been a record of treachery and bloodshed. In 1907 the British Government agreed not to annex or occupy any part of Afghanistan or to interfere in its internal affairs so long as the Amir fulfils his obligations to Britain.

### Communications, Industries, and Trade.

Afghanistan is very difficult to enter; the mountain chains and difficult passes are great hindrances. The Khaibar and Bolan roads are excellent, but there are no wheeled carriages in the country.

The chief of all the caravan routes is the Khaibar Pass to Peshawar in India, and there are trade routes from Mashad and Bokhara to Herat, and from Quetta to Kandahar. Merchandise is all transported on camels or ponies, but commerce suffers from frequent warfare and bad government. The chief industries are the manufacture of silk, carpets, felts, and *postins*, or sheepskins. At Kabul soap, cloth, and even guns are made. From

India cotton goods, indigo, sugar, and tea are imported, and to India horses, fruits, asafoetida and other drugs, cattle, and hides are sent.

### Towns.

*Kabul*, the capital, has regular and constant communication with India, from which it is 190 miles distant. The city is mainly mud-built dwellings, but there are bazaars in which European goods can be purchased. *Kandahar*, the capital of southern Afghanistan, is important as a trade-centre and as a military centre. *Herat*, the capital of western Afghanistan and one of the principal marts of Central Asia, is in the centre of a fertile irrigated district.

## Persia.

### Position and Extent.

Persia, or Iran, is the most important non-European state of western Asia, extending from Asia Minor on the west to Afghanistan on the east, and from the southern shores of the Caspian on the north to the Persian Gulf on the south. Its greatest length from east to west is upwards of 900 miles, and its area is estimated at 628,000 square miles.

### Surface and General Features.

For the most part Persia consists of a tableland from 3000 to 4000 feet in height. The Elburz range runs south of the Caspian and has Demavend (19,000 ft.), an extinct volcano, as its loftiest peak. Some parallel mountain ranges running from north-west to south-east descend towards the Persian Gulf. A very large portion of Persia—perhaps more than one-half—is desert or uncultivated owing to the want of rain. The great central desert has a few oases; but some parts of Persia are of great fertility, especially the

valleys, which are generally more fertile than the plains. Persia has hardly any rivers that can be considered navigable, but among the most important are the Karun, the one good navigable river entering the Persian Gulf, and the Safid-rud flowing into the Caspian. Many of the rivers are of inland drainage flowing into lakes or losing themselves in the sand. Persia has many saline lakes, the chief being Urumiya.

### **Climate and Productions.**

In the southern lowland the heat of autumn is excessive, in summer it is more tolerable, and in spring and winter the climate is delightful. To the north and north-west the winters are severe. The Caspian regions have great heat in summer and the winter is mild. This area has frequent and heavy rainfall, and the atmosphere is feverish and unhealthy. On the high tablelands of Persia the air is remarkable for its dryness and purity. The yearly rainfall varies from 40 inches on the shores of the Caspian to less than six inches at Yask.

It is evident from many remains that irrigation was formerly much practised and the naturally fertile soil in parts was brought to a high state of productiveness. The forest lands are in the area south of the Caspian, and the trees are chiefly the oak, beech, birch, sycamore, box, and juniper. Most of the large houses have beautiful gardens and the rose is the favourite flower of all Persians. Among the chief crops are wheat, cotton, sugar, rice, and tobacco; the vine flourishes in many provinces; mulberries are largely cultivated and silk is a most important product.

The forests abound with such wild animals as wolves, leopards, tigers, lions, jackals, bears, and foxes. The horse and camel are reared for domestic purposes; oxen are used on the land; and Persian cats have a European celebrity. Flocks of goats and sheep are reared on the pasture lands. The Caspian rivers abound with fish, especially the sturgeon. With the exception

of salt, the mineral products are not important, though coal, sulphur, and naphtha exist in abundance.

### **People and Industries.**

The settled population—the agriculturists, merchants, and artisans—are the descendants of the ancient Persian race, with some intermixture of foreign blood. The nomads, or pastoral tribes, are mainly Turks, Kurds, Lurs, and Arabs, of whom the former are the most numerous. The people are nearly all followers of Mohammed, but there are Parsis, and some native Christians, the Nestorians. The present population of Persia is estimated at 10 millions, although it is believed to have been 40 millions in the seventeenth century. Persia of to-day is the representative of the Persia founded by Cyrus in 537 B.C. when his mighty empire extended from the Aegean to the Indus. Persians are by nature polite, and fond of flattery and ceremony; they are also obstinate, dreamy, and without perseverance.

Persian industries are of great interest to Europeans, who buy the beautiful carpets, shawls, and other articles of wool and silk woven in this country. In addition to these, there are manufactures of swords, all kinds of carved and inlaid metal and wood, ornamental pottery, and attar of roses.

### **Communications and Trade.**

There are only a few miles of railway from Teheran, and not many carriage roads. The means of communication are defective and primitive, and from Teheran to Tabriz goods have to be carried the greater part of the way by pack-animals. Persian trade is not large: the chief exports are pearls, opium, silk, carpets, gums, drugs, and dyes; and the chief imports are cotton goods, sugar, tea, wheat, and flour.

### **Administration and Towns.**

Until 1906 the government of Persia was a pure despotism, the Shah or Padishah having absolute

authority over the lives and property of his subjects. In that year, however, the Persians demanded representative government, and as a result a National Assembly was established; but in 1915 it ceased to exist as a legislative or administrative body. In 1907 Great Britain and Russia agreed between themselves to limit their respective interests in Persia to the Persian provinces adjoining the British frontier on the one side and the Russian frontier on the other.

*Teheran*, the modern capital, is a centre for caravans from all the frontier towns, as is *Ispahan*, the ancient capital, around which cotton and silk are produced. *Tabriz*, in the north, is the commercial capital and the centre of caravan traffic from Trebizond on the Black Sea. *Bushire* is the chief seaport on the Persian Gulf. *Linga* and *Bender Abbas* are also important ports; there are no harbours on the Gulf. *Shiraz*, celebrated in Persian poetry, has long been famed for its roses, wine, and nightingales. *Urumiya*, near the lake of that name, is interesting as the headquarters of the English mission to the Nestorian Christians.

## Asia Minor, Armenia, Syria, and Mesopotamia (Iraq).

### Position and Extent.

This region extends from the Aegean Sea on the west to Persia on the east, and from the Black Sea on the north to Arabia on the south. This extensive area comprises Asia Minor, Armenia, Syria and Palestine, and Mesopotamia.

### Surface and General Features.

Asia Minor is a tableland which reaches a height of 3000 or 4000 feet. The surface of this tableland is generally barren and some parts are desert; but the

valleys and plains skirting it are fertile and beautiful. The tableland is shut off from the lowlands by the Taurus range in the south-east, and the pass through



Village on the slopes of Lebanon.

these mountains, known as the Cilician Gates, is a marked physical feature. In Armenia, the snow-capped peak of Ararat rises to 17,160 feet. Syria and Palestine

are rugged and mountainous, having the parallel ranges of Lebanon and Anti-Lebanon in the north, rising to 10,000 feet. To the south of Lebanon the elevation is not so great. The valley of El Ghor is the deepest depression in the world. Mesopotamia is mainly a large plain between the Tigris and Euphrates.

The north coast of Asia Minor is rocky and has only one good roadstead—Sinope. The north and north-west coast has the Sea of Marmora and the Aegean Sea and is separated from Europe by the narrow straits of the Bosphorus and the Dardanelles. Smyrna is the best harbour on the west coast, which is fringed with islands. The south coast has two large openings but no good seaports. *Cyprus*, which was formally annexed to Britain in 1914, is the most eastern island in the Mediterranean. The coast of Syria is very regular, without harbours, but has the small ports of Iskanderun, Latakia, Beirut, and Jaffa.

### Rivers and Lakes.

The largest river of Asia Minor is the Kizil-Irmak, 800 miles long; the other rivers are so scantily supplied with water as to be of little service for purposes of trade. Lake Van is a salt lake 5000 feet above sea-level, and Tuz-gol is the largest lake in this region. The Euphrates and Tigris both rise in the Armenian highlands and, when about 120 miles from the sea, they unite and form the Shat-el-Arab, which flows into the Persian Gulf. In Syria the Leontes and Orontes rise near each other in the Lebanon range; and the Jordan, rising near Mount Hermon, flows through Lake Merom and the Sea of Galilee and discharges itself into the Dead Sea, whose waters are extremely salt and below the sea-level.

### \* Climate and Productions.

The coastal regions have a climate which is often pleasant, but the central tableland has an extreme climate, with cold winters and hot summers. On

the north coast there is considerable rain, and heavy falls of snow are frequent. The whole of this region receives more rain than the Iranian plateau lying to the east, for the winds blow southwards from the Black Sea in winter and eastwards from the Aegean in the summer.

In Asia Minor and Armenia there are forests of oak, fir, and beech, and rhododendrons and azaleas flourish. Wheat is cultivated on the plateau, and in various districts are grown the vine, olive, fig, orange, lemon, and other fruits. The soil of Syria is very fertile, but has been impaired by neglect. Besides the Mediterranean products, the silk of Lebanon, the tobacco of Latakia, and the oranges of Jaffa have acquired a great celebrity. Mesopotamia is largely dependent upon irrigation, and the neglect of the works for this purpose have led to a greater decline in the prosperity of this region than in Syria and Asia Minor.

Among the many animals found the following are the most noteworthy: bear, panther, lynx, wolf, chamois, and ibex. Good horses and excellent camels are bred, and the Angora goat is deservedly famous.

### People and History.

The population may be estimated at 21 millions. The Turks form the majority of the population, but there are Kurds, Circassians, Greeks, Armenians, and Nestorians. The people are partly Mohammedans and partly Christian. It may be said generally that the Mohammedans are the descendants of those who changed their creed, and the Christians of those who retained it.

The history of Asia Minor and its people has been influenced by its close proximity to Europe and the absence of navigable rivers. The advent of the Turks in A.D. 1071 began a long period of decay, lasting to the present time. The early history of Mesopotamia is a record of contending nations struggling for mastery. This country remained prosperous till A.D. 635,

when it fell to the Arabs, and later on was at the mercy of the Turks, Mongols, and Tartars. The early history of Syria and Palestine is of the greatest interest. The Hittites, the first recorded power in Syria, had their capital at Kadesh on the Orontes; and later the Phoenicians rose to power in their great cities, Tyre and Sidon, while the Jews founded a kingdom which attained its greatest glory in the reign of Solomon. In course of time Syria and Palestine fell to Assyria, then to Persia, afterwards to Rome, and subsequently to the Arabs and Turks, the latter of whom eventually became victors. The most remarkable events in the history of Syria and Palestine are the birth and work of Christ, and the Crusades of the Middle Ages.

The Treaty of Versailles in 1919 placed Palestine and Mesopotamia under British rule, and made Syria an independent state under a Mandatory Power. The Treaty of Sevres in 1920 gave a sphere of influence to Italy in south-west Asia Minor, and to France in south-east Asia Minor. Greece was given Ionia to govern for five years, before deciding whether it should be annexed to that country.

### Trade and Communications.

In Asia Minor trade is chiefly carried on by caravans, but railways are now being constructed. Smyrna is the terminus of lines that ascend three of the most fertile valleys. Railways run from Beirut across Mount Lebanon to Damascus, from Jaffa to Jerusalem, and from Egypt to Damascus. At present there are about 1000 miles of railway in Mesopotamia; camel-caravans and river-boats and rafts form the chief means of communication. Ocean-going steamers ascend to Basra, river-steamers to Bagdad, and smaller boats to Mosul. Foreign vessels are not allowed on the Euphrates or on the Tigris above Bagdad. Most of the products of Asia Minor reach Europe by way of Constantinople, being sent from Trebizond, Sinope, and

of Damascus, is a well built town of considerable military and commercial importance.

In the Great War Jerusalem and Damascus were taken by the British forces under General Allenby in 1917.

## Arabia.

### Position and Extent.

Arabia, the largest peninsula in the world, is in the south-west of Asia. Its greatest length from north-west to south-east is 1800 miles; its mean breadth is about 600 miles; and its area is estimated at 1,250,000 square miles.

### Surface and General Features.

In shape, Arabia is an irregular parallelogram, having the broadest side at the south. Its general character is African rather than Asiatic. The chief feature is the vast central plateau which rises from a height of 2500 feet in the north to 7000 feet in the south-west. This is bounded by mountain chains in the west and south, the former reaching a height of 8500 feet. There is a low strip of land, hot, partly fertile, and of varying width, between the mountains and the sea. In the north of the interior is the Nefud, a desert of red sand; in the middle of the country is the mountainous district of Nejd; and to the south of Nejd is Dahna, another sterile sandy desert, extending from Mecca to Oman. The only part that is well-watered is Yemen, where there are rich and fertile valleys.

The coast-line of Arabia is remarkably regular and there are few really good harbours. The Gulf of Akaba and the Red Sea on the west form an almost unbroken shore-line, and owing to the shoals and coral reefs its harbours are difficult of approach. Perim, at the south end, is the most important of a few islands

at the entrance of the Strait of Bab-el-Mandeb. The south coast from that Strait to Ras-el-Had has the harbours of Aden, Dafur, and Keshin. The east coast has the harbour of Muscat, and beyond Cape Masandam extends the shallow Persian Gulf with several groups of islands—Jishm, Bahrein, etc.

### Climate and Productions.

The climate is generally hot and dry, for the winds blowing from the Sahara carry no moisture. As a rule the coastal districts are hot and unhealthy; but the highlands of Oman are cool and healthy. In the Nejd district the days are hot and the nights cold. The mountainous tracts of Yemen and Oman have a fair supply of rain; rain falls on the central plateau in spring and autumn; but in the north, rain is not plentiful and falls only in winter.

At least one-third of Arabia is desert and uninhabitable, and nowhere does a river reach the sea all the year round. Yemen is the most fertile region, and here coffee, fruit, and vegetables are the chief products. Among the other productions of Arabia are senna, balsam, incense, indigo, and the date-palm.

The wild animals include the tiger, panther, lynx, hyaena, and gazelle. Ostriches are found in Nejd; and the pearl fisheries in the Persian Gulf are of great importance. The camels and dromedaries of Arabia are famous, and the horses have always been celebrated. White donkeys, broad-tailed sheep, goats, and cattle are reared in many parts of the country.

### People and Industries.

The population is sparse and is estimated at 5,000,000. The Arabs mainly belong to the Joktanites and the Ishmaelites. The language is Arabic, and the prevailing religion is Mohammedanism. The Bedawin, or wandering tribes, are far outnumbered by the settled tribes. The government is patriarchal, and the chief men of the tribes have the title of Emir, Sheikh, or Imam.

Mohammed, the founder of Islam, belonged to the Ishmaelites. The Moslem era dates from Friday, July 16, 622 A.D., when the Prophet fled from Mecca to Medina. Mohammed died in 632 A.D.

In Oman there are manufactures of cotton, silk, and fire-arms, and there are exports from Arabia of coffee, dates, figs, spices, and drugs. Yemen has an ideal climate for coffee-culture, and the port of Mocha gives its name to the coffee there produced.

### Divisions and Towns.

Arabia is under eight systems of government, of which the Kingdom of Hedjaz, the Sultanate of Oman, the Imamate of Yemen, and the Emirate of Nejd are the chief. The British Protectorate of Aden is in the south-west corner of Arabia.

*Sana* is the capital of Yemen, and *Hodeida* and *Mocha* are its two busy seaports. *Maskat* (*Muscat*) is the capital of Oman and has some trade. *Mecca* is the chief town in Hedjaz and is 50 miles from its port, *Jiddah*, on the Red Sea. As a pilgrimage to Mecca is the desire of every Moslem once in his life, this holy city is crowded every year with pilgrims, most of whom come by sea, and land at Jiddah.

## Aden, Perim, and Kuria Muria Islands.

*Aden* is a peninsula and town, belonging to Britain, about 100 miles east of the Strait of Bab-el-Mandek. The peninsula, a mass of volcanic rocks rising to 1776 feet, is joined to the mainland by a narrow, sandy isthmus. The town is on the eastern shore of the peninsula and stands in the crater of an extinct volcano. The place is naturally barren, and, for the greater part of the year, the heat is intense; the period from October to April, the north-east monsoon, is cool

and agreeable. The harbour, one of the best in this part of the world, is perhaps the most important coaling-station in the world. Aden became a British possession in 1839, and the opening of the Suez Canal in 1869 increased its importance. The trade is almost entirely a transshipment one. The chief exports are coffee, gums, hides and skins, piece goods, and tobacco; the chief imports are cotton twist, piece goods, grain, hides and skins, and tobacco. Owing to the limited water-supply, enormous reservoirs are used to store the rainfall; water is also obtained by condensers erected at the harbour.

*Perim*, a barren island at the southern entrance of the Red Sea, was occupied by the British in 1799 and again in 1857. A light-house stands on it, to facilitate the passage of the Red Sea.

For purposes of administration, both Aden and Perim form part of British India.

The *Kuria Muria Islands* are a group of five islands near the south-east coast of Arabia. They were ceded to England in 1854 and form a dependency of Aden. The area of Aden is 75 square miles, but including the Protectorate of the hinterland it amounts to 9000 square miles.

## CHAPTER IX

### AFRICA

#### Position and Size.

Africa is a great continent forming a south-western extension of Asia, to which it was attached from earliest times by the isthmus of Suez, which is now pierced by a canal 90 miles long. It is sometimes said that the Suez Canal has made Africa an island, but this waterway is so insignificant, compared with the vast area, that it need not be regarded when the continents are considered in their natural relations. The continent of Africa, including the islands, has an area of about 11,500,000 square miles and is thus three times the size of Europe. It stretches across  $72^{\circ}$  of latitude, or about 5000 miles from Cape Blanco in Tunis to Cape Agulhas in the south; and from Cape Guardafui in the east to Cape Verde in the west it measures 4500 miles. Africa, like Australia, is heavy and monotonous in its general outline. It will be noticed that, in shape, Africa is a triangular land-mass, having the base on the Mediterranean and tapering to its apex in the southern seas.

#### Surface and General Features.

The greater part of Africa is a vast plateau from whose surface higher ridges frequently rise. The northern portion of this plateau is generally lower than the southern portion, and the highest summits occur as a rule near the outer edge of the plateau. The Atlas range is not connected with any other of the highlands of Africa, and is the most important range in the

north of the continent. The Atlas Mountains are a series of ranges crossing Morocco, Algeria, and Tunis, and the northern ranges are a continuation of the Sierra Nevada in Spain. These mountains were formerly connected with the Apennines of Italy across the strait between Tunis and Sicily; their connection with the Alpine system has been sundered by the formation of the Straits of Gibraltar and by the subsidence of the land in the east, the Maltese islands being the last evidences of the lost land. The Atlas range attains its greatest height in a peak of 14,500 feet; but its average height would not exceed 6000 feet.

The Atlas region is cut off from the south by a depression, much of which is below sea-level; and the Sahara, an immense sandy waste, is succeeded by the African plateau, to which reference has been made, and which extends from the Sahara to the Cape of Good Hope. The mountain ranges of the African plateau are not well defined. The Kameruns form the edge of the plateau along the Gulf of Guinea. The Kong Mountains are to the north of the Gulf of Guinea, and the Drakensberg and other mountains in the south of the continent have peaks of 10,000 and 11,000 feet. The highest mountains in Africa, Kilima Njaro, Kenia, and Ruwenzori, are volcanic peaks rising high above the plateau to a height of from 17,000 to 19,000 feet. The African plateau has narrow coastal plains, low in elevation, both in the east and west. These plains are generally unhealthy, but, as they are narrow, the higher and healthier land behind them is soon reached.

### **Rivers and Lakes.**

It will be understood that the tortuous courses of the rivers, often unnavigable, the systems of internal drainage, and the numerous lakes are due to the plateau formation of the continent. It may also be noted that, as we should expect, the longest rivers rise in the districts having a heavy rainfall, while

the dry areas have only intermittent streams, whose beds are mere lines of water-holes in periods of drought such as occur in Australia. The longest rivers in many cases flow round the rims of the plateaux, and where they break through they have deep falls which impede navigation. As these falls are comparatively near the sea, it will be recognised that this constitutes a great drawback to trade. The rivers may be classified as those flowing down the outer, and those flowing down the inner, slopes of the highlands. The former are generally short, while the latter, having great distances to run before reaching the sea, are the chief river systems of Africa. It will be found that the longest rivers rise on the highlands of eastern Africa and on the mountains of the western Sudan.

The most remarkable and interesting river is the *Nile*, which, flowing from south to north, receives its chief tributaries from the highlands of the east. From its remotest source, near the east of Lake Tanganyika, to the sea, the Nile has a length of upwards of 4000 miles. The river, obstructed in its course by the "Six Cataracts of the Nile," has been dammed at Aswan and Asiut, in order to regulate the amount of water available for irrigation. In June of each year the level of the river begins to rise, and so continues till October, when, at Cairo, its level is 26 feet above low water. "After October, the river falls; and in May the level is so low that a child may walk across it below the barrage near Cairo." The mystery of the rise of the Nile during the driest season is explained by the rainfall and the melting of the snow on the mountains 2000 miles away. This rainfall, which occurs in the spring, takes several months to reach Egypt. The *Congo* is about 2800 miles long and, although not the longest, is the greatest of African rivers. Its remotest source is in the streams that flow into Lake Bangweolo. It flows northward and then westward to the Atlantic over the western rim of the plateau, after falling over first the Stanley Falls

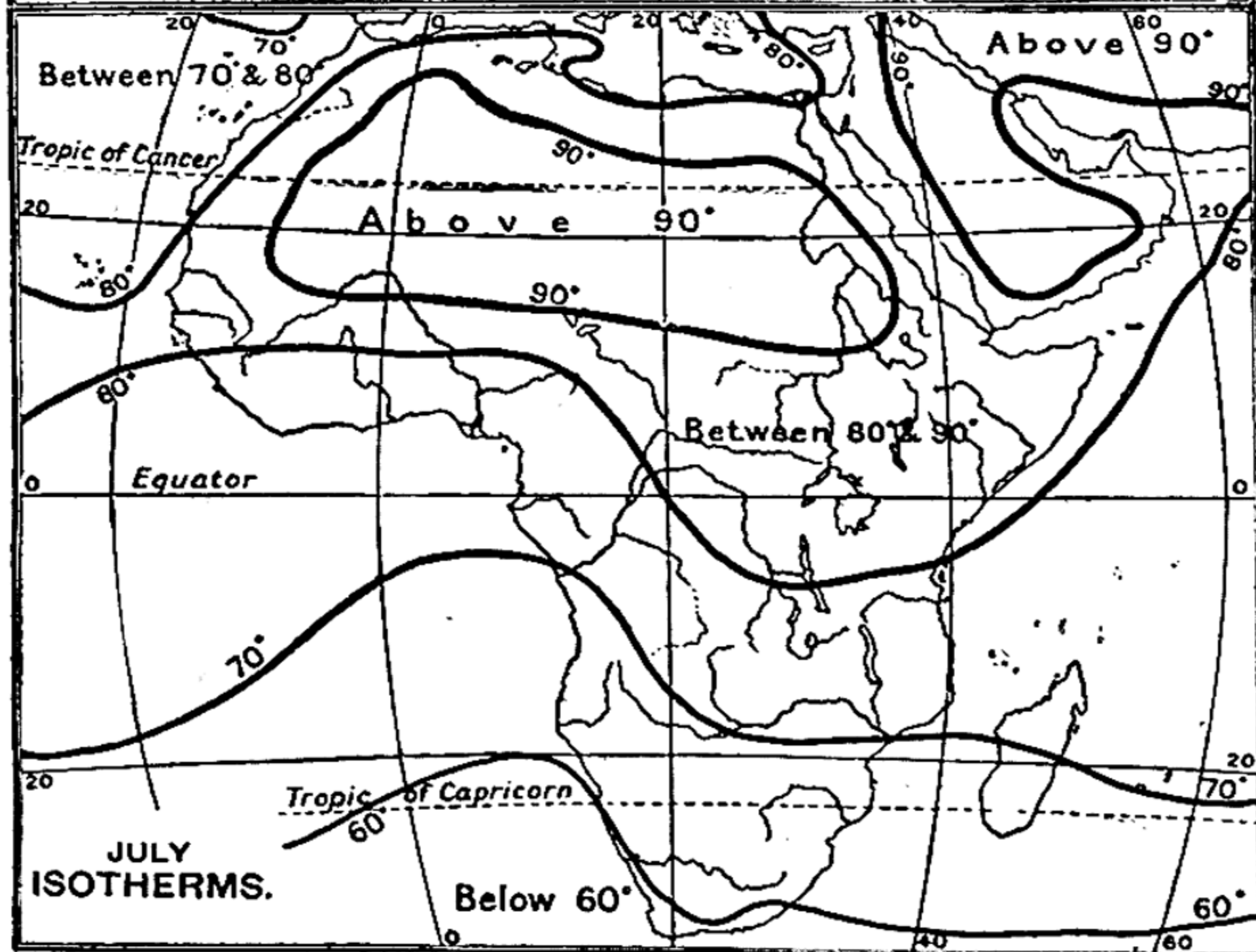
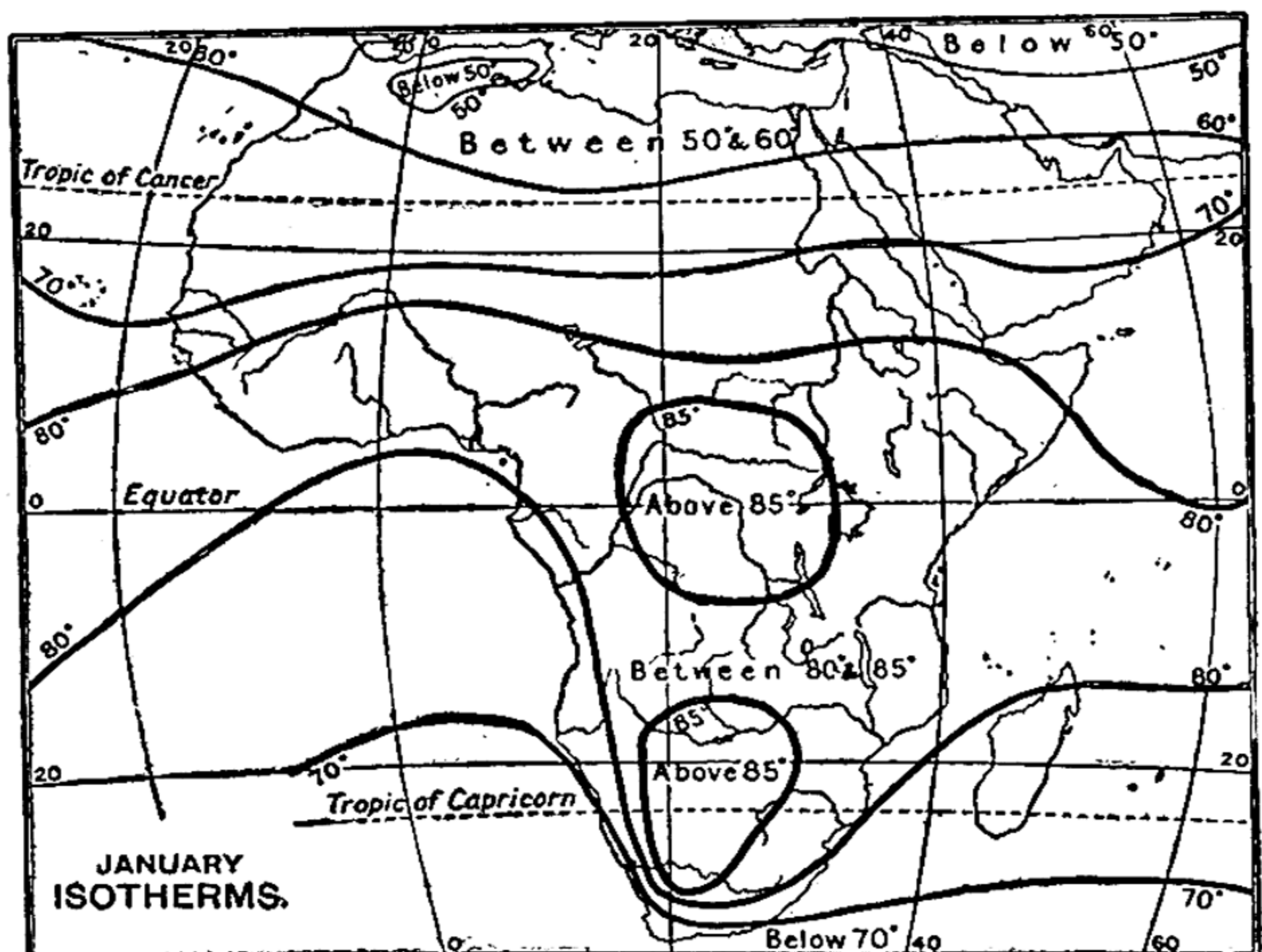
and then the wild rapids of its lower course. The *Niger* is the third longest African river and rises not far from the sea on the north of the Kong mountains. It flows inland, passing Timbuktu, and, after a semi-circular course of about 2600 miles, reaches the Atlantic near Boma. The river is of great commercial value, for it is navigable for the greater part of its course.

The chief rivers draining the southern portion of the plateau are the *Zambesi* and *Limpopo*, flowing eastwards, and the *Orange River*, flowing westwards. The *Zambesi*, 2000 miles long, has the remarkable Victoria Falls, 2850 feet above the sea, and below the Falls the river flows through the cañon which it has cut through the plateau. The *Limpopo* is nearly as long as the *Zambesi*, but it flows through an arid region. The main stream of the *Orange River* rises in Basutoland and forms the boundary between the Orange Free State and the Cape of Good Hope, while its most important tributary, the Vaal, is the southern boundary of the Transvaal.

The great equatorial lake system of Africa is paralleled only by that of North America. These lakes are on the southern tableland and are Nyasa, Tanganika, connected with the Congo, and Victoria Nyanza, Edward Nyanza, and Albert Nyanza, all draining into the Nile. The Victoria Nyanza, the largest of all the African lakes, has an area of 30,000 square miles. The Shotts in Tunis, Lake Chad in the Sahara, and Lake Ngami in Bechuanaland have inland systems of drainage, and as there is no overflow, they are salt. The Abyssinian lake Tana is a true Alpine lake and was once considered the farthest source of the main stream of the Nile.

## Coast.

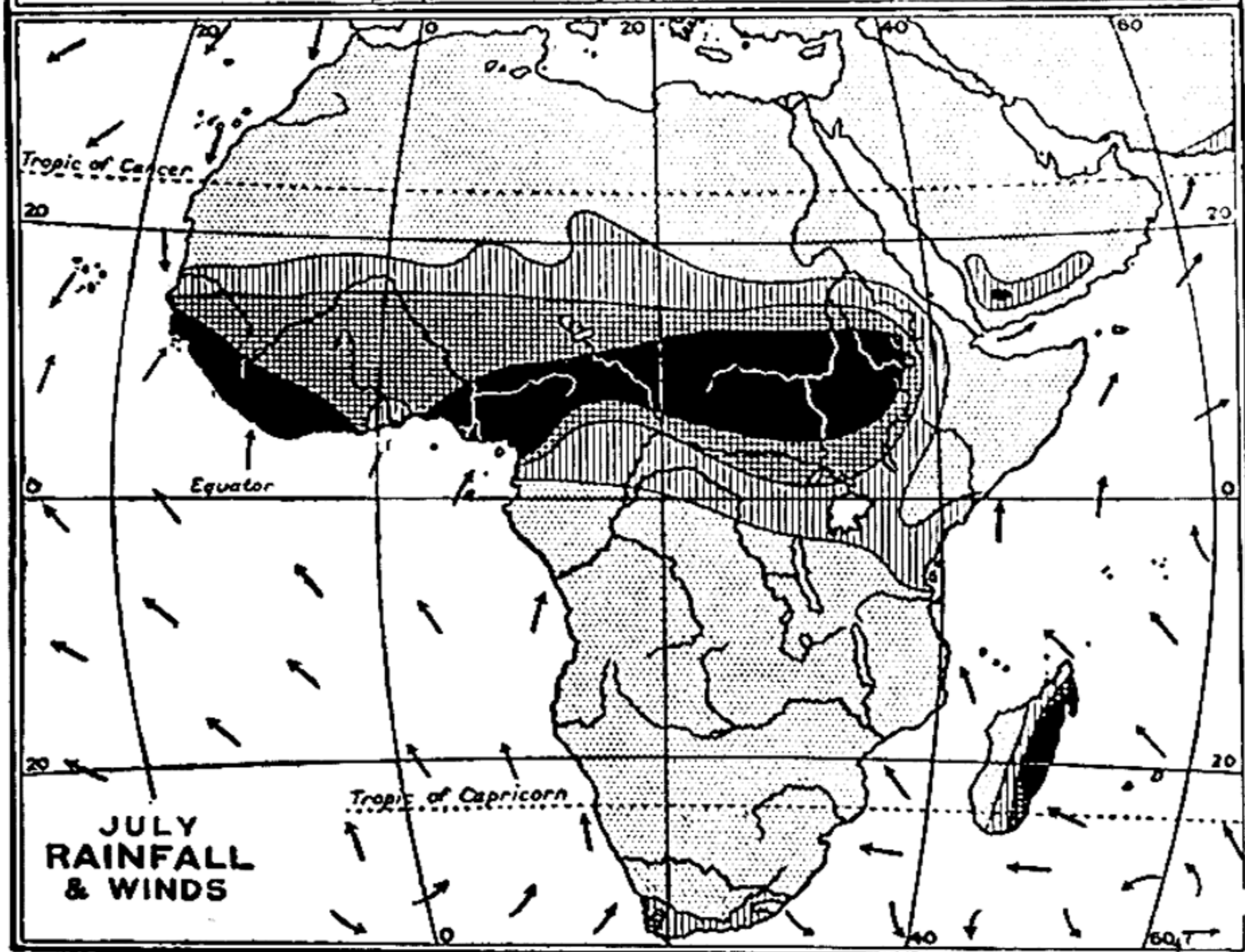
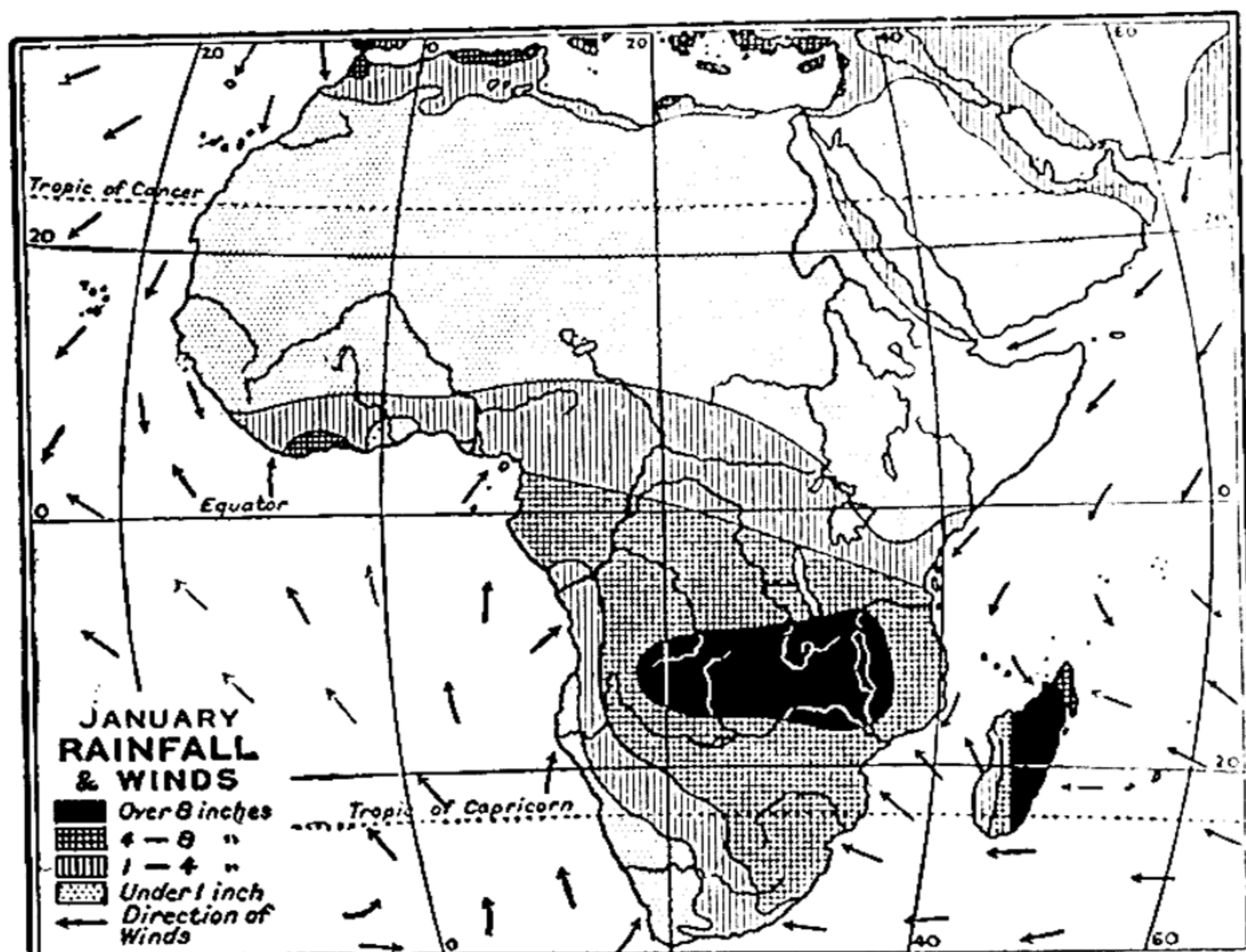
It has been already noticed that the general outline of Africa is monotonous in its regularity, and this will be more apparent when it is remembered that, although Africa is three times the size of Europe,



its coast-line is only 15,000 miles, compared with the 19,000 of Europe. There is an absence of deep openings and of well-defined peninsulas. In the north there is a wide and shallow opening forming the Gulf of Gabes in the ~~east~~<sup>west</sup> and the Gulf of Sidra in the ~~west~~<sup>east</sup>; and on the west coast, the Gulf of Guinea has the Bights of Benin and Biafra with marshy, unhealthy shores. The north coast is low around the Nile delta, but rocky in Tunis, with the projecting Cape Blanco and Cape Bon; and as a rule the eastern coast is bolder than the western. There is a general lack of good harbours around the coasts, and Delagoa Bay in Portuguese West Africa is the best natural harbour. It may also be noted that there are few important islands round the coast. Madagascar, the largest island, separated from the mainland by the deep Mozambique Channel, is the remnant of a great land-mass now flooded by the Indian Ocean. Mauritius, Reunion, and Rodriguez also appear to be fragments of this submerged continent. Very few of the insular groups belong to the mainland, but most of them are mere coral-reefs or of volcanic origin. The Comoro Islands in the Mozambique Channel are volcanic, as well as Fernando Po and other islands in the Gulf of Guinea. The Madeira, Canary, and Cape Verd archipelagoes are also of volcanic origin, while St Helena and Ascension are mere rocks in the great ocean expanse of the Atlantic.

### **Climate and Rainfall.**

While there is considerable uniformity in the relief of Africa, this characteristic is not so marked in the climate. Africa is the hottest of the continents, but the climatic differences are not so extreme as in the other great divisions of the earth. This may be seen by reference to the map on p. 281. As the equator crosses the middle of Africa, it is only the northern and southern portions that are in the temperate zone. The coast-lands of equatorial Africa are hot, malarious districts, but



the elevated interior is cooler and healthier. The Sahara is one of the hottest regions, but, owing to rapid radiation, the hot days are succeeded by cool and sometimes frosty nights. In January the isotherms in the north of Africa range from  $50^{\circ}$  on the Mediterranean coast to above  $85^{\circ}$  near the equator; while in the south the temperature ranges from  $70^{\circ}$  along the coasts to  $90^{\circ}$  in the interior. In July it will be observed that these temperature conditions are reversed. Africa lies in latitudes where the atmosphere retains large quantities of uncondensed vapour, and its interior is reached by winds that have been deprived of much of their moisture when passing over the bordering mountains. The districts with an abundant rainfall are in the equatorial region, narrow strips on the east and south-east coast, specially east Madagascar, and part of the north coast of the Barbary States. The west coast, south of the Tropic of Capricorn, is very dry, owing to the south-east winds blowing away from the coast. The south-eastern trade winds, which in summer are drawn inland from the Gulf of Guinea, are made much drier by the Kong Mountains and the Kameruns, so that the Sahara gains no moisture from these winds, and over this great desert tract in the north there is almost complete absence of rain, as is the case in the Kalahari desert in the south. Between these two desert regions the rainfall gradually increases to the vicinity of the equator, where the greatest rainfall of the continent occurs.

### Plants.

It will be obvious that the distribution and character of African vegetation depend upon the temperature and rainfall. About two-fifths of the surface of Africa is said to be either desert, under scrub, or otherwise waste; an equal amount is nearly treeless savanna land; this leaves one-fifth for forest and arable lands. The rainfall is responsible for the tropical forest and

jungles of the Congo and the Zambesi and the tropical river-valleys of the western Sudan. Northern Africa has plant-life similar to that of Europe; but the desert to the south of this region is almost barren, with very few fertile spots. The coastal regions have an abundance of palms, some yielding oil, and the forests yield timber, including mahogany, ebony, and great supplies of rubber, especially in the Congo basin. In the savanna lands are found huge baobabs and the curious euphorbia, which grows like a candelabrum. Many of the higher mountains have a succession of zones of plant-life dependent upon the altitude. The forest zone is followed by the bamboos in regular thickets, and higher still there are tree lobelias. Along the margins of the Upper Nile and the Congo papyrus and other aquatic plants grow luxuriantly. In the deserts drought-resisting plants, especially the gum acacia, are found, while in the oases of the Sahara the date-palm is the characteristic tree.

### Animals.

It is found that a line drawn across the Sahara at the Tropic of Cancer marks the division between the animals of the northern or Atlas region, which are allied to those of Europe and Asia, and those of the southern or Ethiopian region, which are characteristically African. Among the typical African animals are the hippopotamus and the giraffe, which are not found in any other part of the world, the rhinoceros, the zebra, the eland, and great herds of antelope; while among the carnivores may be mentioned the lion, leopard, hyena, and jackal. Monkeys are widely distributed; the crocodile is found in nearly all the rivers; and pythons and snakes are numerous. The ostrich thrives in the south, and there are many species of birds of prey and birds of brilliant plumage. Many of the insects are harmful to plant and animal life, the tse-tse fly being particularly troublesome to horses and cattle. The deserts of the north are the habitat

of the camel, and the dense forests teem with insect life, birds, reptiles, baboons, and gorillas.

### **Minerals.**

Africa yields a large portion of the gold supply of the world. The principal gold-field is on the Witwatersrand in the Transvaal, and there are other gold-fields in Rhodesia, Abyssinia, and the Gold Coast. Diamonds are obtained from the mines of Kimberley and of the Transvaal. Coal and iron are found in South Africa; copper occurs in south-west Africa; and phosphates are obtained from the rainless area of south-west Africa.

### **People and their Distribution.**

The population of Africa is estimated at 200,000,000, and is distributed, according to the soil and climate, very unevenly over the continent. The most thickly peopled regions are the Nile valley and the Sudan, while the Barbary States and South Africa are less densely populated. There are great areas of the Sahara, Libyan, and Kalahari deserts that are absolutely without inhabitants. European races are in the minority, being represented by the Dutch and British in the south, and by British, French, Italians, and Portuguese along the coasts. The great majority of the people—perhaps as many as 175,000,000—are aborigines, and the negroes, the typical African people, occupy the greater part of Africa south of the Sahara. The debased Hottentots and Bushmen live in the south-west of Africa, and the Pygmies inhabit the tropical forests of the Congo. The people of the northern portion of Africa consist chiefly of the Semites and the Hamites. The former prevail in Algeria, Tunis, Egypt, and the Nile valley, while the latter include the Somali, Gallas, Nubians, and some of the Abyssinian tribes. Speaking generally, the Negroes are nature-worshippers, and the northern Hamites and Semites, who entered the continent from the north-east, are

Mohammedans. The chief exception to this latter statement is the fact that there is a numerous Christian sect in Abyssinia. The Copts of Egypt are professedly Christian and have preserved their faith notwithstanding Mohammedan domination and oppression.

### History, Exploration, and Partition.

The ancient history of the greater part of Africa is shrouded in obscurity, but it seems probable that the first African civilisation began in Egypt, owing



A Hamitic wedding-dance.

to the incursion of the Hamites from Arabia. The history of Egypt began several thousand years before the Christian era. The influence of the Arabs extended down the east African coast, and after the time of Mohammed they conquered the greater part of north Africa, the history of which is better known because of its nearness to Europe. The whole continent, however, came more into notice at the close of the fifteenth century, when the Portuguese came to the front, as a great maritime nation. The Cape of Good Hope was rounded by Bartholomew Diaz in 1488,

and the route to India was discovered by Vasco da Gama in 1492. From this time, the Portuguese made settlements along the east African coast to be used as stations for their ships journeying to India. In 1652 the Dutch settled at Cape Town and colonised the Cape district, but this was lost to them during the Napoleonic wars, when Britain conquered this territory. During the eighteenth century many attempts were made by British, Portuguese, and French to penetrate the interior, but the first notable journey was that of James Bruce, who found the source of the Blue Nile (1768-1772).

At the beginning of the nineteenth century, Denham and Clapperton made their memorable journey from Tripoli to Lake Chad and Sokoto, and Lander determined the course of the Niger, whose source had been previously discovered by Mungo Park. The year 1840 is notable, for it was then that David Livingstone went out to South Africa as a missionary, and began his explorations which extended over a period of more than 30 years, during which time he travelled 29,000 miles. While Livingstone was making his discoveries in South Africa, Burton and Speke in 1858 reached the Victoria Nyanza and Tanganyika; and in 1859 Speke discovered the outlet of the Nile at Ripon Falls, thus solving a question that had puzzled geographers from the earliest times. About the same time, Sir Samuel Baker discovered another source of the Nile in the Albert Nyanza. In 1872 Stanley found Livingstone at Ujiji, but the greatest of our African explorers died at Bangweolo in 1873. Stanley continued his work in Africa and made noteworthy journeys through the Dark Continent. He traced the Congo, and made most important discoveries in that part of equatorial Africa now known as the Congo Free State. The number of British explorers is so large that it is only possible to mention a few of the outstanding names, such as Cameron, Thomson, Keith Johnston, and Selous, all of whom made important discoveries.

It will be understood that as Britain had the greatest share in the work of exploration, it was a matter of course that she should have the chief control when the partition of Africa took place in the last quarter of the nineteenth century. From a British point of view, the results of that partition, chiefly from 1887 to 1892, were eminently satisfactory. Britain acquired an extension of her South African colonies into regions beyond the Zambesi, and of the West African colonies into Nigeria. Her influence was established over Egypt and the fertile Nile valley, and she gained extensive territories in East Africa. France, too, gained much new territory and extended her possessions in Algeria and Tunis into the Sahara and the western Sudan. Germany acquired great areas in East and South-west Africa, Upper Guinea, and the Kameruns; but these were lost in the Great War (1914-18). Italy tried unsuccessfully in 1889 to establish a right to Abyssinia, but was defeated in 1896. She kept Eritrea, and in 1911 seized Tripoli from Turkey. Belgium, through its King Leopold, founded the Congo Free State. Spain retains some territory on the mainland as well as the Canaries, and Portugal has kept its ancient possessions on the east and west. The only independent states in Africa are Abyssinia, under its Negus, and Liberia, a negro republic, founded in 1847. Morocco, nominally independent, is under French influence.

With the partition of Africa, there followed its development by the Europeans. Railways have been constructed to open up the interior, and the most remarkable achievement is the construction of a large portion of the Cape to Cairo railway. Another line runs across British East Africa to the Victoria Nyanza, and there is a railway up the Congo to Stanley Port. The railways in British South Africa have a length of nearly 10,000 miles. A railway was constructed in 1911 from Baso, a port on the Niger, to Kano, a distance of 356 miles. The Lagos railway has been extended to

Minna, which is 250 miles from Lagos, and the Bauchi Light Railway has been constructed for 100 miles from Zaria towards the Bauchi plateau.

## Morocco.

### Position and Extent.

Morocco (sometimes written Marocco) is the western part of the great natural region, the Atlas lands, which stretches from the Gulf of Gabes on the east to the Atlantic on the west. The length of Morocco from north-east to south-west is over 600 miles, and throughout the greater part of this length the breadth is about 250 miles. The area is about 231,500 square miles.

### Surface.

Morocco may be divided into the following areas : two mountain systems—the Riff and the Atlas, and three plateaux—the Meseta, the plateau of “shots,” and the Sahara plateau.) The exact height of the highest peaks is not known, but some are 12,000 and 13,000 feet above the sea-level. The main Atlas system has a general level of over 2000 feet. The coast may be described as “young,” and as the cycle of erosion has not advanced far enough to produce an indented margin, there are few harbours and no good ones. (The Riff coast is steep; the Meseta coast is higher and more uneven and provides the harbours of Casablanca, Mazayan, and Safi; while the plain of the Sus has a low sandy shore.)

### Rivers.

Morocco is drained by rivers flowing into the Atlantic, the Mediterranean, and the Sahara, but at present they are all rendered useless for navigation by the sand-banks at their mouths. The Moluya

is the one important river flowing into the Mediterranean; and the Sebu, Um-er-Rebia, Tensift, and Sus are the chief rivers on the Atlantic slope. South of the Atlas the rivers are temporary, containing water in their lower courses only when the snow is melting on the mountains.

### Climate and Rainfall.

In summer Morocco is under the influence of the north-east trades, and in winter under that of cyclonic systems passing from the west. The temperature of that portion of Morocco facing the Atlantic is modified by two factors—the trade winds blowing from northerly latitudes are relatively cool winds, and the Atlantic coast of Morocco is washed by very cold water. The Atlas Mountains form a climatic barrier, so that in the greater part of Morocco the influences of the Sahara climate are not felt. The average temperatures for January and August at the coast are  $61^{\circ}$  and  $71\frac{1}{2}^{\circ}$  F. respectively, and on the plateau  $52^{\circ}$  and  $93^{\circ}$  F. The rainfall on the Mediterranean coast is small, and towards the interior of the plateau the relative moisture of the atmosphere decreases rapidly. It has not yet been proved that perpetual snow exists in the Atlas, but the melting of the snow produces river floods long after the rainy season on the plateau has ceased.

### Productions.

The coastal belt of Morocco has one of the most fertile soils in the world. This is a black earth, and owes its formation to the moist climate and the accumulation of organic matter due to the decomposition of animals. The most noteworthy plants are the olive, ilex, cork-oak, fig, vine, and the argan tree. Among the crops grown are barley, beans, flax, sorghum (or dhurra), mustard, hemp, and cotton in the south. The mineral products include copper ores, and petroleum. The fisheries are not developed, but

sardines, mackerel, and tunny abound all along the Atlantic coast. Coral is also found.

### People and History.

The latest estimate of the population of Morocco places it at 5,000,000, and of this number about 250,000 are Jews and 62,000 Europeans of various nationalities. The Arabs are found on the plains and form one-third of the population, while the Berbers form the remainder. The Arabs are nomadic; the Berbers are industrious, attached to the soil, and anxious to earn money. The recognised religion is Islamism, but the mountaineers are semi-pagan.

### Industries and Communications.

In the towns the people are engaged in leather working and the weaving of wool into carpets and clothes. Agriculture and the rearing of cattle, sheep, and goats are the chief occupations of the bulk of the people. Communications are very backward. There are no roads and the caravan tracks are often impassable in winter. The journey from Tangier to Fez takes eight days, the most frequented route being from Mazagan to Marakesh (Morocco). All goods have to be carried on the backs of animals, chiefly camels.

### Towns.

The chief towns are *Fez*, *Mekenes*, and *Marakesh* (*Morocco*), and at each of these capitals the Sultan resides for a portion of the year. *Tangier*, the most important of the coast towns, once belonged to England (1662–1683). Here the agents of foreign Powers reside, and it is a favourite winter resort. *Mogador* is the port of Morocco on the south-west coast.

## Algeria.

### Position and Extent.

Algeria is a country in the north of Africa between Morocco and Tunis. Its area has recently been considerably extended by the addition of new territories in the south and now covers about 343,500 square miles.

### Surface.

Algeria has three distinct natural divisions. In the north, the Tell is a strip of mountainous, cultivated land, with fertile valleys; in the middle is the region of steppes, or high plateaux, traversed from west to east by a succession of shotts, *i.e.* brackish lakes or marshes; and in the south is the Algerian Sahara, with oases, but mainly of sandy dunes, although part of this area is covered with herbage after rain. In the Tell district are the Lesser Atlas Mountains, while the south limit is a parallel chain, the Middle Atlas.

### Rivers and Wells.

The longest rivers rise in the middle region and find their way to the Mediterranean through the mountain passes. Not one of them is navigable, and, though swollen by the winter rains, they are almost dry in the summer. The most considerable are the Shelif, Mafrag, Seybus, and Wed-el-Kebir. The French have done a splendid service to the country by sinking hundreds of artesian wells for irrigation and other purposes.

### Climate and Rainfall.

The climate on the Mediterranean coast is very fine, and large numbers of visitors are found in the coast-towns during the winter: The summer is rainless

and extremely hot. On the high peaks of the Atlas snow lies as late as June. In the Sahara district the variations of temperature are extreme.

### **Productions.**

The plants and animals are similar to those of Spain, Sicily, and Sardinia, and are nearly all natives of southern Europe. Algeria is essentially an agricultural country and is coming to the front as a wheat-growing region. Fruits and vegetables are grown for the European markets, and the cultivation of the grape, silk, and tobacco is extending. The forest trees comprise pine, oak, and cedar, and the special exports are cork and halfa, or esparto grass. The ores of various metals are found in abundance, and comprise copper, lead, and iron, and the country is rich in decorative stones—marble and alabaster.

### **People and History.**

The native population are mainly Arabs and Berbers. Jews are numerous, and among the European settlers are large numbers of French and Spaniards. The total population is estimated at 5,000,000. The French conquered the country in 1830, and before that date the coast-towns were the homes of pirates who infested the Mediterranean Sea. After the French conquest down to 1870 Algeria was under military rule; but since that date there has been a governor-general assisted by a council. The colony has now been divided into two great divisions, Northern and Southern Algeria.

### **Industries and Communications.**

The French have done much to develop the resources of the country; 3300 miles of excellent roads have been made and about 2000 miles of railway. Harbours have been constructed, and new land has been brought under cultivation by the sinking of

artesian wells. There is little manufacturing, although carpets, blankets, and pottery are made by the Arabs. The breeding of sheep is one of the chief industries. The trade of Algeria is mainly with France, the chief exports being cereals, esparto grass, tobacco, iron-ore, wine, and cork.



An Arab sea-captain.

## Towns.

*Algiers* is the capital of the colony, and its value as a coaling-station for vessels trading in the Mediterranean is increasing. In the old town the streets are narrow and irregular; but the modern town has regular streets and fine public buildings. The French have much improved the port, which is now safe and spacious. The other ports of importance are *Oran*, *Bougie*, *Philippeville*, and *Bona*. Of the interior towns,

*Constantine*, a natural fortress and a place of beauty and grandeur, and *Biskra*, a winter station on the border of the desert, are the most noteworthy.

## Tunis.

### Extent and Surface.

Tunis, situated between Algeria and Tripoli, has an area of about 50,000 square miles, and a coast-line of 550 miles. It is the most northerly country of Africa. Much of the surface is occupied by hills and, towards the south, by desert steppes. A chain of the great salt marshes called "shotts" separates the northern portion from the Sahara. The well-wooded and watered region in the north is known as the Tell. None of the rivers are navigable, and there are no perennial streams except the Majerda.

### Climate and Productions.

The climate, though trying for Europeans, is not particularly unhealthy. The annual rainfall varies from 10 to 50 inches, the heaviest rains falling in December and January. Snow falls on the higher altitudes, and some of the highest peaks are always snow-clad.

The soil is fertile, producing fine grain crops, and oranges, dates, figs, olives, grapes, pomegranates, and almonds are grown. There are cork forests in the north-west and much cork is exported. Tunis has an abundance of minerals, and the mines are being developed. Copper, lead, zinc, and iron are exported, and there is a large trade in phosphates.

### People, Industries, and History.

The bulk of the population, estimated at two millions, consists of Bedwin Arabs and Kabyles. Jews are numerous, and the European population are chiefly

Italians, French, and Maltese. The prevailing religion is Islamism, but there are many Roman Catholics.

The chief industry of the people is agriculture and the rearing of sheep and cattle. The native industries are the spinning and weaving of wool, leather work, and pottery; the fisheries are in the hands of Italians, Greeks, and Maltese.

Tunis was invaded by France in 1881, and has since been a French protectorate, although the Bey is still maintained as ruler.

### Communications and Towns.

The occupation of Tunis by the French has been of great benefit to the country, and good roads and railways have been constructed. The chief trade is carried on with France and Algeria, but Great Britain and Italy have a good share of the commerce.

The capital is *Tunis*, situated on a small lagoon through which the French have cut a canal, so that Tunis is within easy access of the sea. The ruins of Carthage are a few miles to the north-west of the city. *Bizerta*, at the extreme north of the country, has been turned by the French into a strongly fortified harbour. *Sfax*, on the south-east coast, is the town of chief importance after Tunis.

## Libya—Tripolitania and Cyrenaica.

### Extent and Surface.

Libya, the largest and most easterly of the Barbary States, has an estimated area of 800,000 square miles. Its coast-line stretches along the Gulfs of Cades and Sidra, and the land frontiers extend southward to Fezzan. Much of the area belongs to the Libyan Desert—the most desolate stretch of the Sahara. The surface of the northern portion consists of low rocky chains which break up a surface of sandy and

stony plains. The Atlas range terminates in two chains about 2000 feet high. In Fezzan there are some oases, and Barka is a limestone tableland.

### Climate and Productions.

The climate is not suitable for Europeans. Hot south winds laden with desert sand are very trying. There is little rain in the interior and in the coast districts the winter fall is from 7 to 20 inches.

Tropical fruits, grain, wine, cotton, and madder are produced in the coast region. The interior yields dates wherever there is water, and esparto grass is grown on the coast moors. Sheep, cattle, and mules are reared.

### People and History.

The population of about one million is essentially Berber, but there are many Jews, Italians, and Maltese. Europeans are, however, only seen in the coast towns.

Tripoli has belonged in turn to the Phoenicians, Carthaginians, Romans, Arabs, Spaniards, and Turks. In 1911 it was seized by Italy, who for some years had sought to extend her influence in Tripoli. Many of the natives are concerned in a considerable caravan trade, which brings from the interior gold-dust, ivory, and ostrich feathers.

### Towns.

*Tripoli*, the capital of Tripolitania, is a typical Moorish city, with high walls, beautiful gardens, and extensive palm groves. It has an open harbour, and is the terminus of the chief caravan routes across the desert. *Benghazi*, one of the "five cities" of Barka, the ancient Cyrenaica, is a port second only to Tripoli in its trade connections with the interior. *Ghadames* and *Rhat* are situated in oases in the south of Tripoli, and *Murzuk* is a walled town of some trade importance in one of the oases of Fezzan.

## Egypt and Anglo-Egyptian Sudan.

### Position and Extent.

This vast area is entirely in the basin of the Nile, and stretches from the Mediterranean Sea in the north to approximately  $5^{\circ}$  N. lat. The total area of Egypt proper, extending to Wady Halfa and including the Libyan oases, the region between the Nile and the Red Sea, and El-Arish in Sinai, is about 350,000 square miles; but the cultivated and settled area, that is, the Nile delta and valley, covers only 12,000 square miles. Anglo-Egyptian Sudan, extending for 1200 miles south of Egypt Proper, has an area of about 1,014,000 square miles.

### Surface and General Features.

Egypt is still "the gift of the Nile," even as it was in the days of Herodotus. "Egypt is confined to the bed of the flooded Nile, a groove worn by water in the desert; and the bordering deserts and the southern provinces of Nubia and the Sudan form no part of the Egypt of nature or of history." Looking at the whole of this area of 1,350,000 square miles, we find that, with the exception of the Abyssinian and the Lakes plateaux and a ridge of high land along the western shore of the Red Sea, the remaining portion is comparatively flat, composed of sandy desert-lands on either side of the Nile—the Libyan Desert on the west and the Nubian Desert on the east.

### < The Nile.

The Nile, which alone gives fertility to Egypt and the Sudan, is of importance as a waterway. Its head streams rise between  $2^{\circ}$  and  $3^{\circ}$  S. lat. and flow through the Victoria Nyanza and the Albert Nyanza. From this latter lake it issues as the Bahr-el-Gebel,

which is afterwards joined by the Bahr-el-Ghazal and the Sobat. These joint streams form the White Nile, which flows on to Khartum, where it receives the Blue Nile, which comes from the mountains of Abyssinia; and further north at Berber it is entered by its last tributary, the Atbara. Onwards to the sea, for 1800 miles, it now flows without a single affluent. The Nile is navigable throughout its entire length, except where it issues from the Albert Nyanza and at the Cataracts between Khartum and Aswan. The great feature of the river is the annual rise of its waters, which is due almost entirely to the summer rains and the melting of the snow on the mountains of Abyssinia. The river begins to rise about 26 June; by September it has reached the top of its banks and has begun to overflow, except where restrained by dykes. The normal rise at Cairo is 25 feet; if it exceeds 27 feet there is danger to the embankments, which require much watchful care. It will thus be seen that the river requires careful regulation, so that the area under cultivation may receive the full benefit of the waters. Since the British have had control of this area great dams have been constructed at Aswan and Asuit, with the result that the irrigated area has been considerably extended and so the prosperity of Egypt has developed. Since the construction of the dam, the cataract at Aswan has been rendered artificial; and as the Aswan dam raises the level of the river during the period of low water, the second cataract at Wady Halfa has ceased to exist. Above Wady Halfa four rapids obstruct the Nile navigation before Khartum, but these rapids are now avoided by the railway. In 1900 the Nile above Khartum was cleared of the *sudd*, or matted floating vegetation, which hindered navigation.

The delta of the Nile has its apex at Cairo and its base of 150 miles on the Mediterranean from Alexandria to Port Said. The river discharges its waters mainly through the Rosetta and Damietta branches. This

delta region is the most fertile in all north Africa, and is steadily increasing seawards, as there are no tides to carry away the suspended matter.

### Climate and Rainfall.

The climate of Egypt Proper is remarkably warm, especially south of the delta and in the desert. From Cairo to Alexandria the air is moister and the Mediterranean coast is subject to rain. With this exception, Egypt Proper is almost rainless, Cairo having less than 2 inches per annum. The January and July temperatures near the Delta are  $57^{\circ}$  and  $82^{\circ}$ , whereas the temperature on the plateaux is about  $80^{\circ}$  all the year round. In the equatorial portion of the Sudan the rainy season lasts for ten months; but further north at Khartum it is much shorter. In northern Egypt the Khamisin, a hot, dry, sand wind, blows at intervals from February to June, and then from June to February cool northerly winds prevail.

### Productions.

There is an absence of woods and forests in the Nile valley of Egypt Proper; the date and the doom palm, the sycamore, acacia, tamarisk, and willow are the commonest trees. The vine, fig, pomegranate, orange, and lemon abound, and water-melons are the food and drink of the people. The lotus or water-lily has long been famous. Egypt is essentially an agricultural country, and, in some parts by the aid of regulated irrigation, as many as three crops are produced in the year. Wheat is the principal cereal, but barley, maize, durra, beans, lentils, and clover are extensively grown. The cultivation of papyrus for paper has been superseded by the culture of the sugar-cane, rice, cotton, indigo, and tobacco.

Of wild animals, the lion and leopard are found in the Sudan, as also are the elephant, hippopotamus, chimpanzee, and other apes. The crocodile is rare in

the Nile north of Aswan; the flamingo, ibis, and heron breed in the Delta and the Fayum. The stock of the farmer includes horses, asses, mules, the ox, the buffalo, and the camel; the donkey plays a large part in Egyptian life, and the camel is the most useful beast of burden.



Donkey laden with water-skins.

Along the Blue Nile and its tributaries the soil is rich and produces durra, millet, sesame, and pulse. Vast forests line the river banks, and contain valuable trees—ebony, gum, acacia, bamboo, and rubber. The finest gum forests are in Kordofan and the best rubber in the Bahr-el-Ghazal.

Gold is worked in Upper Egypt between the river and the Red Sea; phosphates, nitrates, and petroleum are found in other parts; but the mineral wealth chiefly consists in limestone, sandstone, and granite quarries of the desert hills.

## People and History.

The population of Egypt Proper is nearly 13 millions, of whom 286,000 are foreigners comprising Greeks, Italians, British, French, and other nationalities. The density to the square mile is 931, and the population has increased to the present number from 2,400,000 in 1800. The bulk of the Egyptian people are employed in agriculture. The great majority of the Egyptians are Mohammedans, but there are many Copts, Jews, and Christians. The population of Egyptian Sudan is roughly computed at  $3\frac{1}{2}$  millions; but it still suffers from the effects of the Dervish oppression, when it was depopulated.

The earliest period of Egyptian history is calculated at from 5000 to 4000 B.C. The kingdom was at the height of its glory under the 19th dynasty, to which Rameses I and II belonged. Egypt was conquered by Persia in 527 B.C., by Alexander the Great in 332 B.C., and by the Romans after 31 B.C. The Arab and Moslem conquest occurred in 641 A.D. Napoleon invaded the country in 1798. Modern Egyptian history opens with the reign of Mehemet Ali in 1805; his grandson Ismail Pacha became Khedive in 1867, but was deposed by the Sultan in 1879. The revolt of Arabi Pacha in 1881 was suppressed at Tel-el-Kebir by Britain, and from this date the recent history of the country really begins. Since the occupation in 1882 by Britain, British influence has been supreme; a British Protectorate was declared in 1914. In 1922 a new era opened when the Sultan became King of Egypt. Egyptian Sudan was associated between 1881 and 1885 with the Mahdi

insurrections. In 1898, however, Lord Kitchener reconquered the Sudan, after defeating the Khalifa's forces at Omdurman.

### Trade and Communications.

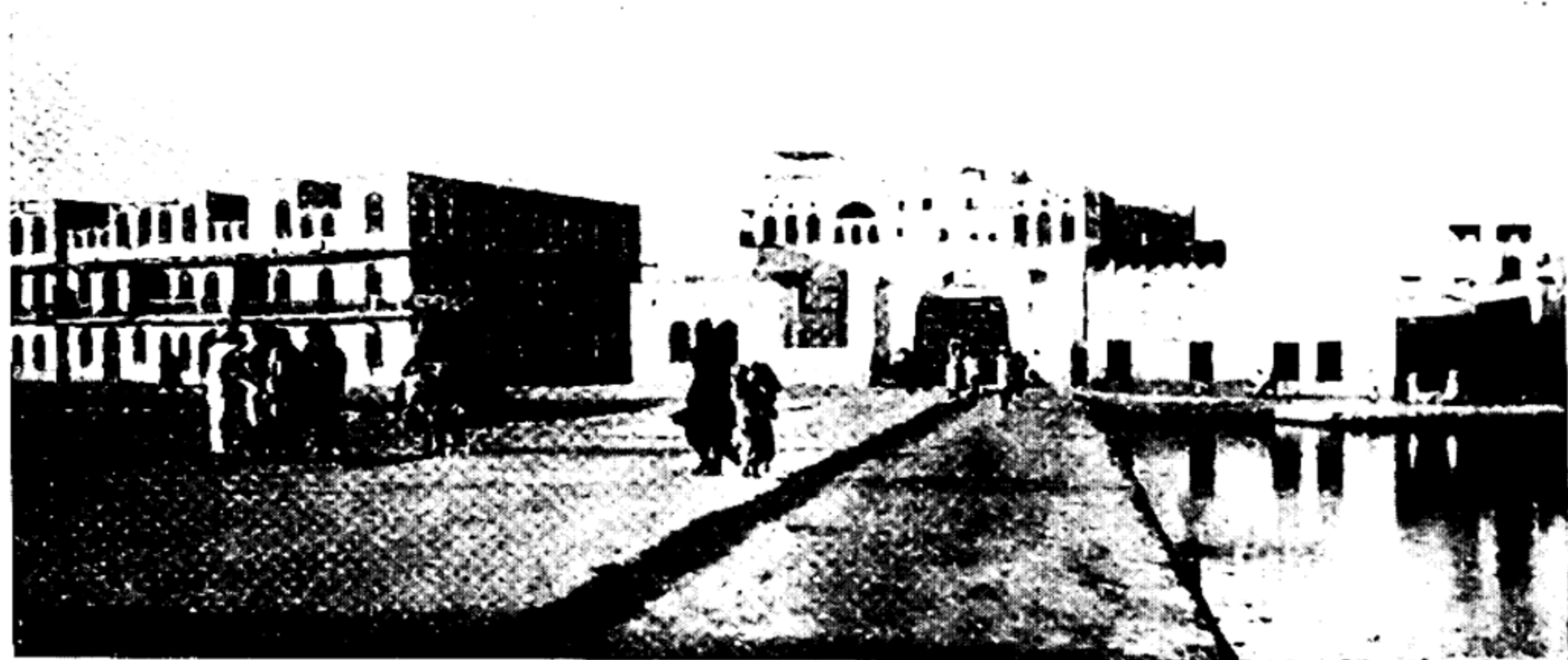
The Egyptians have long practised such industries as gold and silver work, ornamental fabrics, and pottery, and these have been supplemented of late by silk and cotton weaving, and sugar refining. Among the exports, cotton is by far the most important, followed by beans, sugar, and onions. Cotton manufactured goods are the chief imports, and next in value are coal, wool, coffee, indigo, and clothing.

The United Kingdom receives about half the value of the exports and sends about two-fifths of the imports. The value of the Nile as a waterway has been already mentioned, and the Suez Canal lies entirely in Egyptian territory. The canal, 103 miles long, was completed in ten years under the supervision of the French engineer De Lesseps, and mainly by French enterprise. It was opened for navigation on 17 November, 1869, and has since been widened and deepened to meet the growing demands. Four thousand vessels annually pass through it, and the revenue from tolls amounts to nearly £4,500,000 per annum. The number of British ships using the Canal is more than half the total. The Suez Canal is joined by canals from Cairo and from Zagazig, and the Mahmudieh Canal joins Cairo to Alexandria. The railway now runs from Alexandria, through Port Said and Suez, to Khartum, and forms the northern portion of the projected Cape to Cairo railway. In 1918 Cairo was connected by railway with the Palestine system.

### Towns.

*Cairo*, the capital and the seat of government, has a fine position on the Nile. It has a large population (nearly 800,000) and is the centre for the Nile tourist traffic. The picturesque city is giving way to modern

ideas of western commerce and sanitation; and owing to its dry climate Cairo is becoming a noted winter resort for wealthy Europeans. *Alexandria*, a strange mixture of East and West, has one of the best harbours in the Mediterranean and is the centre of Egyptian commerce. *Tanta* is the largest town in the Delta region. *Port Said* is at the northern, and *Suez* at the southern, end of the Suez Canal. *Aswan*, below the First Cataract, derives importance from the great dam erected in 1890–1902 in connection with recent im-



Suakin.

provements in Egyptian irrigation. *Thebes*, *Karnac*, and *Luxor* have remains of temples and other antiquities. *Khartum*, at the junction of the two Niles, is a town of increasing importance. Gordon lost his life here in 1885. Lord Kitchener reconquered Khartum in 1898, and in memory of Gordon a college for the training of natives has been established. The town is rapidly becoming the centre of trade for this great region. *Suakin*, on the Red Sea, is the only port of Egyptian Sudan.

## Abyssinia.

### Position, Extent and Surface.

The ancient empire of Abyssinia or Ethiopia is a highland state of eastern Africa, having an area of 350,000 square miles. The country is mainly a great tableland with a mean elevation of 7000 feet, some of the peaks reaching 15,000 feet or more. It has the head streams of the Blue Nile, issuing from Lake Tsana, and the Atbara, also a tributary of the Nile.

### Climate and Productions.

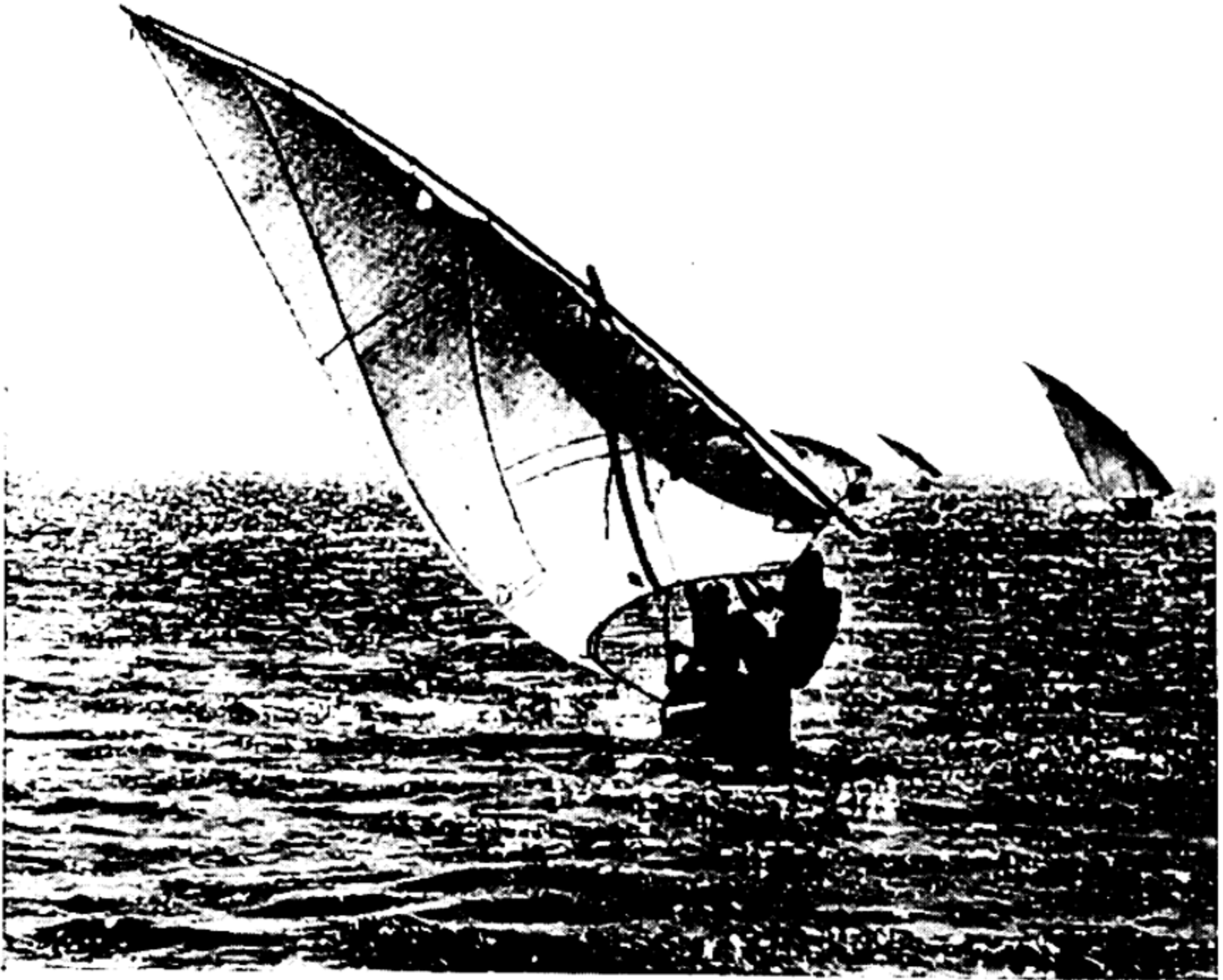
The climate, notwithstanding the tropical position, is pleasant and healthy, owing to its elevation; but in the river valleys and swamps the heat and moisture are very trying. There are heavy rains in the spring and a smaller rainfall in the autumn. Snow falls on the higher mountains.

The country is generally fertile, and its productions are of the most varied character. Cotton, the sugarcane, date-palm, coffee, and vine thrive; the forests abound in valuable trees and rubber; and iron, gold, silver, and copper are found.

### People, Industries, and History.

The estimated population is from 8 to 9 millions, and consists of the Abyssinians proper, Gallas, and Somalis. The Emperor, or Negus, claims descent from Solomon and the Queen of Sheba. The people follow a debased form of Christianity which was introduced in the fourth century. The country was invaded in 1867 by British troops under Lord Napier, who stormed Magdala. In 1889 the Italians proclaimed a protectorate, but owing to the overthrow of their army in 1896 they withdrew. The chief industries are pastoral and agricultural. Cattle, sheep, and

goats are numerous, and mules are bred everywhere, being used as pack animals. Roads are mere tracks and transport is effected by means of mules, pack-horses, donkeys, and camels. A railway 330 miles long runs from Jibuti to the capital. The little foreign trade comes chiefly through Massowa.



Pearling canoes on the Red Sea.

## Towns.

There are numerous towns, but all of small size. The most important are *Gondar*, the capital of Amhara ; *Adua*, capital of *Tigrê* ; *Addis Abeba*, the present capital of Abyssinia ; and *Harar*, an important trade centre near the Somali frontier.

## Eritrea.

Eritrea is an Italian protectorate at the south-western end of the Red Sea having a coast-line of 670 miles. The area is about 45,800 square miles, and *Asmara* is the seat of government. The climate is tropical and there is a general scarcity of water. Camels, oxen, sheep, and goats are common, and there is some pearl-fishing at *Massowa*, the chief port.

## French Somali Coast.

The Somali Coast Protectorate lies between Eritrea and British Somaliland. Its area is about 5790 square miles, and the seat of government is at *Jibuti*, which superseded the old harbour of *Abok*. The country has scarcely any industries, but the coast fisheries and inland trade are of importance. The chief exports are coffee, ivory, and hides, and much of the traffic with Abyssinia passes along the railway through Jibuti to Addis Abeba in Abyssinia.

## Somaliland.

This eastern projection of Africa lies between the Gulf of Aden and the Indian Ocean, having the Juba, its chief river, as the south-western frontier. The country is an undulating plateau, in many places parched and barren, though, in the rainy season, swampy in parts. The elephant, hippopotamus, lion, leopard, crocodile, and antelope abound. The natives are Somalis, a warlike and pastoral people of the Hamitic race.

BRITISH SOMALILAND, with a coast-line of 450 miles, has an area of 68,000 square miles, and its chief towns are *Berbera*, *Bulkar*, and *Zaila*.

ITALIAN SOMALILAND extends from west of Cape Guardafui to the equator and has an area of 139,000 square miles. There are several coast towns—*Mogadishu*, *Merka*, and *Brava*, of which the first is the seat of government.

## British Possessions in East Africa.

British Possessions in East Africa consist of Kenya Colony with Uganda, Tanganyika Territory, the islands of Zanzibar and Pemba, Sokotra, Mauritius, Rodriguez, the Chagos Archipelago, and the Seychelles.

### Kenya Colony.

#### Extent, Surface, and Productions.

This colony extends from the Uмба to the Juba River and inland to the borders of Uganda. The area is estimated at 250,000 square miles. The low coastal plain, fringed with islands, is succeeded by a steep slope leading to the broad tract of barren country forming the plateau of Nyika. Beyond this are grassy plains, with a number of lakes and rivers without outlets to the sea. The chief products of the lowlands are rice, maize, and various native grains, while cotton and tobacco are cultivated. On the uplands there are good pasture-grounds for cattle, and in the highlands potatoes, coffee, wheat, and barley are grown. There are large tropical forests yielding cedar, camphor, jarrah, cork, iron-wood, olive, and other useful species.

#### Communications and Towns.

The British East Africa Company ruled this territory from 1888 to 1895 when the administration passed to the Crown. The chief port is *Mombasa*, which has a deep and accessible harbour. From this town

runs a railway 584 miles long to Lake Victoria Nyanza. It passes through much desert country but also through healthy highlands.

## Tanganyika Territory.

This Territory, taken from Germany in 1918, has a coast-line of 620 miles, extending from the Umba to Cape Delgado, and an area of 384,000 square miles.



Uganda children having a meal.

Near the coast there are forests of mangrove, coco-palm, baobab, and tamarind; in the higher regions grow the acacia, cotton-tree, sycamore, banyan, and other trees. There are plantations of coffee, vanilla, tobacco, sugar, tea, cotton, and cinchona. The chief seaports are *Dar-es-Salaam*, *Bagamoyo*, and *Kilwa*. The former, with one of the best harbours on the east coast of Africa, is the Governor's residence.

## The Uganda Protectorate.

### Extent, Surface, and Productions.

Uganda is an inland country having an area of about 110,000 square miles. Within its boundaries lie parts of the following lakes—Victoria Nyanza, Edward Nyanza, Albert Nyanza, and Rudolf, and the whole of Lake Kioga. It also includes the course of the Nile from its exit from Lake Victoria to Lado or Gondokoro, where the Egyptian Sudan begins. The soil is very fertile, except in the Rudolf region, and the products are cotton, sugar, ground-nuts, rubber, hides and skins; cocoa, coffee, and arrowroot are being experimentally cultivated.

### Communications and Towns.

Reference has already been made to the railway from Mombasa, which has done so much for this territory. Nile steamers from Khartum visit Gondokoro, and vessels ply on some of the lakes. The British headquarters are at *Entebbe*, and the native capital is at *Mengo*. This territory came under British influence in 1890 and a British protectorate was declared in 1894.

## Zanzibar and Pemba.

Zanzibar has an area of 640 square miles and Pemba of 380 square miles. These islands, which came into British hands in 1890, are from 20 to 30 miles off the coast of East Africa. Zanzibar was formerly of great importance, as it was the capital of the East African settlements belonging to the Arabs. The population is dense and the natives are chiefly Swahili, but there are representatives of nearly every African tribe. The Arabs are the principal landlords and employers of labour. Most of the natives are Mohammedans. Both islands are fertile; cloves and coco-nuts are the chief products, and ivory, rubber, spices, and gum are exported. Zanzibar is visited by great liners from

Britain, France, and Germany, and there is also communication with Bombay, Aden, and Durban.

## Sokotra.

This island, 150 miles from Cape Guardafui, has an area of 1382 square miles. The climate is moist and warm. Aloes and dragon's blood are products. The island has been a British possession since 1876 and has *Tamarida* for its capital.

## Mauritius.

Mauritius is a volcanic island, elliptical in shape, lying 500 miles east of Madagascar. Terrible cyclones are common and cause great havoc, but the climate is generally healthy. The one great crop of the island is sugar, and for its cultivation most of the forest land was cut down in the nineteenth century. The island, with an area of 720 square miles, has a population of over 380,000 people. Besides many half-castes, there are Negroes, Malagasy, Singhalese, Malays, and Chinese. The greater part of the population consists of Indian coolies who have been imported to work the sugar-fields. Mauritius, discovered by the Portuguese in 1507, has belonged in turns to the Dutch and French, and passed to Britain in 1810. *Port Louis* is the capital.

## Rodriguez and the Chagos Archipelago.

Rodriguez, 350 miles east of Mauritius, and the Chagos Islands are dependencies of Mauritius. *Diego Garcia*, the largest of the Chagos Islands, has a good harbour and is of importance, as it lies on the direct route from the Red Sea to Australia.

## The Seychelles.

This group of 90 islands lies 600 miles north-east of Madagascar and has an area of 160 square miles. The principal island is Mahê, and *Victoria*, its capital, is a coasting station. The climate is tropical and healthy; the soil is fertile; and the chief products are the coco-nut palm, vanilla, rubber, guano, coffee, and drugs. The islands were taken by the British from the French in 1794. The people are mainly of African descent, but there are some of French origin.

## Portuguese East Africa.

The Portuguese territory extends from Cape Delgado to Delagoa Bay, a distance of 1400 miles. In the north the coast is indented and fringed with islands; in the south it is low and bordered by sand-hills and lagoons. The River Zambesi divides the country into two parts; the northern province is Mozambique and the southern Lourenço Marques. The Zambesi is the greatest waterway in East Africa, but above Chindu it can be navigated only by vessels of shallow draught. The chief products are rubber, sugar, coco-nuts, and bees-wax. The principal seaports are *Lourenço Marques*, at the head of Delagoa Bay, and *Beira*, both of which have railway communication with the interior. *Mozambique* is the old capital. *Chindu*, on the delta of the Zambesi, and *Quilimane* owe their importance to the river transport trade.

## French Islands on the East Coast.

### Madagascar.

#### Position and Extent.

Madagascar, one of the largest islands of the world, has an area of 228,000 square miles, and is

separated from Africa by the Mozambique Channel, 240 miles wide at the narrowest part.

### Surface.

The elevated interior region, from 3000 to 5000 feet high, is surrounded by a comparatively low and level country. The plateau region covers half the island and the highest peak reaches an altitude of 9000 feet.

### Climate and Productions.

The climate of the high interior is healthy, but the coast region is hotter and malarial fever is prevalent. The average annual rainfall at the capital is 53 inches. All round the island is a nearly unbroken belt of dense forest, from 10 to 15 miles wide, which has a large number of valuable timber trees. Madagascar is the home of the lemurs and of the chameleons, but there is a marked deficiency of the larger carnivora. Coffee, sugar, and vanilla are cultivated, and cattle, hides, gum, rubber, and woods are exported.

### People and History.

The population is estimated at nearly 3,000,000, and consists almost entirely of Malagasy, although there are many French among the Europeans. The most intelligent tribe is the Hova, whose language is most prevalent in the island. The French invaded the island in 1883, formed a Protectorate in 1885, and constituted it a colony in 1896.

### Towns.

*Antananarivo* is the capital, and *Tamatave* on the east coast is the chief port.

The archipelago of the *Comoro Islands* was united in 1908 to the government of Madagascar.

## Réunion.

This island, formerly known as Bourbon, is situated 420 miles east of Madagascar. The climate is hot but not unhealthy. Tropical fruits, sugar, coffee, vanilla, cinchona, spices, and tobacco are grown, but sugar is the staple product and export. *St Denis* is the capital. The French occupied this island in 1664, but it was held by the British from 1810 to 1815. The island has an area of 970 square miles. *St Paul* and *Amsterdam*, islands in the Indian Ocean, also belong to France. *Kerguelen*, a desolate island, was annexed by France in 1893.

## British South Africa.

### Position and Extent.

British possessions in South Africa extend from the southern extremity of Lake Tanganyika to Cape Town, a distance of 2000 miles. This vast area of more than 900,000 square miles includes the four provinces in the Union of South Africa—Cape of Good Hope, Natal, Transvaal, and Orange Free State; Basutoland; Bechuanaland Protectorate; Swaziland; Rhodesia; and Nyasaland Protectorate. This territory is flanked on either side by Portuguese colonies and on the north is the Congo State.

### Surface and General Features.

British South Africa has the whole of the coast extending to Delagoa Bay. The coast offers few facilities for trade, as the harbours are few and unprotected, while the river mouths have sand-bars. The one good harbour on the west is Saldanha Bay. Table Bay, protected by a breakwater, has large docks. Simons-town is a British naval station. Port Elizabeth on Algoa Bay is in the route of the main trade.

A great plateau covers most of this country and descends in terraces to the coastal plain. Its average elevation is from 3000 to 5000 feet, and some of the highest peaks reach an altitude of 12,000 feet. Between the Zambesi and the Orange River is the Bechuana depression, the northern part of which is a land of inland drainage and wadis which have little water except after heavy rains. To the east of the depression is the Rhodesian plateau, with an undulating surface. The Inyanga plateau in the north-east has an altitude of 7000 feet, and the Matoppo hills in the south-west form the high land between the Zambesi and the Limpopo. The chief rivers in this district are the tributaries of the Zambesi, and the Pungwe and Sabi, flowing through Portuguese territory to the Indian Ocean. To the south of the Limpopo is the High Veld, which slopes from west to east, ending in a steep escarpment. The Drakensberg range has numerous passes crossing it at heights of 5000 to 6000 feet. Van Reenen's and Laing's Nek are used for railways, and Natal may be considered the foreland of this elevated plateau. The southern escarpments are the Stormbergen and the Nieuwveld, which descend to the Great Karroo. This plain, 70 miles or more in width, is succeeded by the Zwartebergen, at the base of which is the Little Karroo. Another chain of mountains, the Langebergen, now succeeds, and then the land gradually slopes to the sea. It will thus be seen that the British possessions in South Africa occupy a series of great terraces, which rise up to a range of mountains running in a curve from south-west to north-east and are succeeded by a high plateau.

### **Climate and Rainfall.**

The climate resembles that of Australia; there is abundant rainfall on the east and south coasts, but the interior is very dry. Indeed, the great drawback of the climate is drought. In the Cape of Good Hope the thermometer ranges from 60° F. to 70° F. and the

variation of the climate is dependent mainly on rain. The dry air of the Karroo and the regularity of the seasonal changes have given the Cape of Good Hope a reputation as a health resort. In Rhodesia the year has broadly two divisions, the wet and the dry season. From May to September rain seldom falls, and the wet season, which is the summer, begins at the end of October and lasts till the beginning of April. In the winter there is brilliant sunshine and in the summer the heat is tempered by clouds; the winter is never really cold, nor the summer oppressively hot. The temperature at Bulawayo ranges from  $53^{\circ}$  to  $77^{\circ}$  F. and the rainfall in Mashonaland is about 32 inches per year. It may be stated generally that the influence of the south-east trade winds of summer may be traced through Rhodesia and the eastern part of the High Veld, as well as in the hilly region between this latter district and the Indian Ocean. Malarial fever is prevalent in parts of Rhodesia, but in high and windy positions and away from the haunts of the mosquito this disease may be avoided.

### Plants and Animals.

The different surfaces of South Africa provide a great variety of flora. In the north-west is the Kalahari Desert; in the south-east is a high range of mountains; and on the north is an overflowing river, with malarial swamps and a sandy delta. The vegetation of this varied area ranges from thick forests of timber trees to orchids and heaths; but the commonest characteristic of the dry upland plains is a vegetation of thorny shrubs and coarse grasses, soon withered up and quickly revived by rain. On the high veld there are few trees; the bush veld is covered with scrubby plants; and the rich forests of the tropical region are nourished by the copious rains. Elsewhere are found the stunted mimosa or other acacias, willows, cedars, and baobabs; but the chief feature on the sunburnt plain is the euphorbia. It will thus be seen that, while there are

great stretches of barren soil or scanty herbage, yet South Africa is singularly rich from the botanist's point of view. The chief agricultural products are wheat, mealies, Kafir corn, and tobacco. Fruits of all kinds grow readily and are now being carefully cultivated. The climate is well adapted for wine production, and the government is now promoting this industry.

South Africa is the home of most of the wild animals of this continent, and its great plains are specially adapted to be the haunt of big game. Wild animals are, however, becoming scarce in the south, and the lion is confined almost entirely to the northern regions. The elephant also is in danger of becoming extinct and on the south side of the Zambesi is growing scarcer every year. The hippopotamus, the giraffe, the zebra, the antelope, and the quagga are giving place to herds of cattle, sheep, goats, and horses, and ostrich farming is a profitable industry.

### **Minerals.**

The mineral wealth of South Africa is of special importance. The Transvaal is richer in minerals than any other part of South Africa. The gold, which has made this state famous, is found in the Witwatersrand district, where the first gold-field was discovered in 1884. The gold mines of Rhodesia are showing a steadily increasing output, and Southern Rhodesia is now third in the list of the gold-producing states within the British Empire. Coal is found in Natal and in the Transvaal, and there is an abundance of good copper in Namaqualand. The Cape of Good Hope is specially famous for its diamonds; indeed the richest diamond mine in the world belongs to the De Beer's Company at Kimberley.

### **People, History, and Administration.**

The population of the whole of British South Africa is upwards of ten millions, of whom more than one-half live in the Cape of Good Hope and Natal.

This population is exceedingly small when we consider the size of the country, but the sparseness is accounted for by the climate and the soil, which have been already explained. Besides the two white races, the British and the Boers, the European population is not large,



A Bantu warrior.

although in such a town as Johannesburg people of many nationalities are represented. It is probable that the first inhabitants of South Africa were the Bushmen, who have dwindled away before the white man. The Hottentots, too, who arrived after the

Bushmen, are disappearing, and the Bantu stock, generally known as Kafirs, are the chief of the present native races. The Bantu, especially the Zulus, Basutos, Fingos, and Bechuanas, are generally capable of education and have good ideas of law and discipline.

The history of British South Africa is of deep interest and presents many striking contrasts to that of our other dominions. The Cape of Good Hope was discovered by Bartholomew Diaz in 1488, and in 1492 Vasco da Gama rounded the Cape and reached Natal on his way to India. The Portuguese, however, did not make any permanent settlement, and it was not till 1652 that the Dutch under Van Reebeck and other leaders formed at Table Bay a little colony, which gradually extended its borders. Later on, in 1688, many Huguenots, driven from France, arrived in South Africa, and have since blended with the Dutch. In 1806 the Cape of Good Hope passed into our hands, and from that time till 1900 the history of South Africa was of the most chequered character. In 1836 the Boers shook off British rule, and the "Great Trek" was the result. Natal was claimed by Britain in 1842 and remained a Crown Colony till 1893. The Boer Republics, founded in 1852, were annexed by Britain in 1900 after a lengthy and expensive war.

In 1910 the Cape of Good Hope, Natal, the Transvaal, and the Orange Free State were constituted the Union of South Africa. The supreme power is vested in a Governor-General appointed by the King, aided by a Senate and a House of Assembly. Each of the four States has its own parliament to deal with its own provincial affairs. Rhodesia is administered by the British South Africa Company, familiarly known as the Chartered Company, to whom the charter was granted in 1889. Basutoland has been directly under the Crown since 1884. Bechuanaland was taken over in 1885. Swaziland was placed under the High Commissioner for South Africa in 1906. Nyasaland was constituted a British Protectorate in 1891.

## Communications and Commerce.

There are two routes and a number of steamship lines from England to South Africa. The first, or western route, is by Madeira, Las Palmas, or Teneriffe to Cape Town, and the second, or eastern route, is through the Mediterranean and the Red Sea and down the east coast. When travelling by the western route only one stoppage is usually made between England and the Cape, and the whole distance from Southampton is traversed in from 15 to 18 days by the weekly mail-steamers of the Union-Castle Line. By the eastern route to Beira stoppages are made at Aden, Mombasa, Dar-es-Salaam, Zanzibar, Ibo, and Mozambique.

As far as internal communications are concerned, it has been recognised since the time of Mr Rhodes that the development of South Africa must largely depend on a good railway system. There are many difficulties in constructing good roads; canals cannot be made; and the rivers are generally of little value for navigation. What is known as the "Cape to Cairo" Railway is in process of construction, and there is now a network of railways in the eastern half of British South Africa, the district that has the most favourable climate and that produces most minerals. Nearly all the railways are on the 3 ft. 6 in. gauge and rise to the interior by heavy gradients, amounting to as much as 1 in 35 in some places. The main railway runs north-east for 650 miles to Kimberley and on to Mafeking, Bulawayo, and Central Africa. The Midland Railway starts from Port Elizabeth; one line runs north-west to Graaf Reynet, and another runs north-east, with a branch from Grahamstown and Port Alfred, sends a branch westward to join the Kimberley line at De Aar, and continues through Colesberg to the Orange River, and thence through the Orange Free State. The Eastern railway connects East London with King William's Town and winds northward over the mountains through the coal district of the Stormberg to Aliwal North and

Orange Free State. In Natal, a railway runs from Durban to Ladysmith, and is continued to Newcastle and thence onward to join the Transvaal line from Pretoria. In Rhodesia, a line of railway connects Salisbury with Beira, the Portuguese port.

The trade and commerce of the British South African States are rapidly developing and more than three-fourths is with the United Kingdom. Gold from the Transvaal and Rhodesia and diamonds from Kimberley occupy the most prominent place in the exports. Wool is the leading agricultural export, and ostrich feathers, copper, wine, and mohair are also exported in considerable quantities. Among the articles imported are raw materials for manufacture, textile goods, food, and metal goods. There is a high protective tariff on imports.

### Divisions and Towns.

**Cape of Good Hope.** (Area : 276,995 square miles ; population : 2,600,000.)

*Cape Town*, the capital, has one of the best harbours in South Africa. The city has a magnificent site at the foot of Table Bay, between the Devil's Peak and the Lion Mountain, and there are many fine public buildings, including the Houses of Parliament, Government House, and the City Hall. *Port Elizabeth* has a poor harbour but is the principal port for imports, as it is well situated with regard to the most productive regions of South Africa and is in railway communication with the goldfields of the Transvaal. *Grahamstown*, about 30 miles north-east of Port Elizabeth, has lost much of its former importance. *Kimberley*, founded as a mining camp in 1870, is a well-built town, entirely dependent on the famous diamond mines. *East London* is the principal port for the Eastern region, and is connected by railway with the Transvaal goldfields. *Simonstown*, on False Bay, is the South African naval station.

**Natal.** (Area : 35,290 square miles population : 1,200,000.)

*Durban*, the chief port, is connected by rail with the capital, *Pietermaritzburg*, 50 miles inland.

**Transvaal.** (Area : 110,426 square miles ; population : 1,700,000.)

*Pretoria*, the capital, is connected by railway with *Lourenço Marques* on Delagoa Bay, in Portuguese territory, and with the Cape. *Johannesburg*, the centre



Johannesburg: the Market.

of the gold-mining industry and by far the most important town, is connected by rail with all the chief ports from Cape Town to Delagoa Bay. Founded in 1886, it has since grown into a great city with fine buildings and wealthy suburbs.

**Orange Free State.** (Area : 50,389 square miles ; population : 528,000.)

*Bloemfontein*, near the centre of the state and on the main railway, is the only large town.

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**Basutoland.** (Area: 11,716 square miles; population: 500,000.)

*Maseru* is the capital.

**Bechuanaland Protectorate.** (Area: 275,000 square miles; population: 125,000.)

*Serowe* is the capital.

**Swaziland.** (Area: 6678 square miles; population: 100,000.)

*Mbabane* is the capital.

**Rhodesia.** (Area: 439,575 square miles; population: 1,750,000.)

*Salisbury*, the capital of Southern Rhodesia, and *Bulawayo*, the commercial centre, are the chief towns.

**Nyasaland.** (Area: 39,801 square miles; population: 1,000,000.)

*Blantyre*, in the Shiré Highlands, is the chief settlement. *Zomba* is the seat of government.

## Protectorate of South-West Africa.

This Protectorate, having an area of 322,450 square miles, includes the region between Portuguese West Africa and the Cape Province. The coast of about 800 miles is very regular and has no good harbours. The whole of the south and much of the eastern portions are barren and desert. There is little agriculture; market-gardening is common, and cotton cultivation, silk culture, and tobacco-growing are being tried. Copper-mining is carried on, and diamonds and gold have been found. A railway has been made to *Windhoek*, the seat of government, from *Swakopmund*, north of Walfish Bay, and there are other lines of less importance. The primitive inhabitants, mainly Bushmen, are decreasing; the Bantu tribes came from the north and the Hottentots from the south of the Orange River. This Protectorate was captured from Germany in 1915 by South African forces and is administered by the Union of South Africa under a mandate.

## Portuguese West Africa.

*Angola* is the largest of the Portuguese colonial possessions, having an area of 484,000 square miles. Its coast-line stretches for 1000 miles from the Congo to the river Cunene, and has the three good seaports of Loanda, Benguela, and Mossamedes. Angola is an elevated plateau having peaks as high as 7800 feet and a climate almost European. The river-valleys and the plateaux form the savanna region; in the north there is a mixture of savannas and palm groves; while the coast strip has poor and scanty vegetation. The trade is chiefly with Portugal, and the principal exports are coffee, rubber, palm-oil, and cotton. The capital is *Loanda*, with one of the best natural harbours on the west coast of Africa.

*Portuguese Guinea* is an enclave in the French West African possessions south of the Gambia settlements. The chief products are rubber, wax, oil-seeds, ivory, and hides.

*S. Thomé* and *Príncipe* are two hilly islands in the Bight of Biafra. Cacao, coffee, rubber, and cinchona are the chief productions.

*Cape Verde Islands* consist of fourteen volcanic islands, 400 miles off the west coast of Africa. Coffee is the most important product; cereals and sugar-cane are cultivated. The capital of the archipelago is *Praia*, but *Mindello* has an excellent harbour and is an important coaling-station.

## Congo State.

### Extent and Physical Features.

This State was founded in 1882 by Leopold II, King of the Belgians, and annexed to Belgium in 1907. It occupies the heart of Africa, is crossed by the equator, and has an area of over 910,000 square miles. This

great country is situated practically in the basin of the Congo, and more than half its area is a vast forest with immense quantities of india-rubber vines.

### Climate and Productions.

From a European point of view the climate is bad, and owing to the moisture and heat there are all kinds of malarial disease. The average shade temperature is  $80^{\circ}$  and the rainfall is excessive. Elephants, leopards, buffalo, and wild cattle are found in the plains; hippopotami and crocodiles swarm in the rivers. Cassava, maize, rice, bananas, and coffee are cultivated; ebony, teak, oil-palm, and mahogany are abundant in the vast forests.

### Communications and Towns.

The Congo is navigable for 100 miles from its mouth to Matadi; above this for 200 miles are rapids which render the river unnavigable to Stanley Pool; beyond the Pool there are 1200 miles of navigable water to Stanley Falls. Steamers ply on the lower Congo, and a railway joins Matadi and Stanley Pool. *Boma* is the seat of government, and *Leopoldville* is the chief river port.

## Kamerun and Togoland.

*Kamerun* has an area of 190,000 square miles and a sea-coast of 190 miles. Situated between British Nigeria and French Congo, it derives its name from the River Kamerun, which enters the Bight of Biafra. The coastal region is unhealthy, but much of the interior is high-lying and healthy. The Kamerun Peak has a height of 12,480 feet. The country is fertile, and there are plantations of cacao, coffee, rubber, and kola. There is active trade in ivory and palm-oil, but there is little industry except wood-carving and

smelting of iron. Railways are being constructed and good roads are now common between the coast towns. *Duala* is the chief harbour and the seat of government.

*Togoland* has an area of 33,700 square miles and a coast-line of 32 miles. It has for its capital *Lome*, the chief port, which is connected by railway with the other towns. The interior of the country has hills and streams, and there are large stretches of forest, dry plains, and fertile land. The natives cultivate maize, yams, ginger, and bananas; oil-palms, caoutchouc, and dye-woods grow in the forest. The natives are employed in weaving, pottery, smith-work, straw-plaiting, and wood-cutting.

Both Kamerun and Togoland were taken by Britain and France from Germany in 1914 and 1916. Togoland has administratively been divided between France and England. The eastern section, with an area of nearly 22,000 square miles, has been allotted to France.

## French Congo.

The French Congo extends along the Atlantic coast between the Kamerun colony and Congo Free State. The area is estimated at 669,000 square miles and includes the basins of the Gabun, Ogowe, and the Niari-Quilla. The two ports of *Loango* and *Libreville* have a good deal of shipping. The natives grow manioc, and Europeans cultivate coffee, vanilla, and cacao. The forests have valuable woods. Gold, copper, and iron are among the mineral resources.

## French West Africa and the Sahara.

These French possessions are of vast extent, but of little real value. The *French Sahara*, with an area of about  $1\frac{1}{2}$  million square miles, includes the whole of the Sahara, with the exception of the Libyan Desert

and the State of Wadai. The other French colonies are divided into six groups: (1) Senegal, (2) French Guinea, (3) the Ivory Coast, (4) Dahomey, (5) the Colony of Upper Senegal and the Niger, and (6) the Upper Volta Colony. The exports from these colonies are chiefly fruits, oils, and oil-seeds.

(1) **Senegal**, the oldest colony, has *St Louis* for its capital, which is united to the chief ports by railway.

(2) **French Guinea**, whose area is 97,000 square miles, produces india-rubber and ground-nuts in abundance. *Konakry*, a sea-port, is the capital.

(3) **The Ivory Coast** has an area of about 130,000 square miles. The principal centre of trade is *Grand Bassam*, but *Bingerville* is the seat of government.

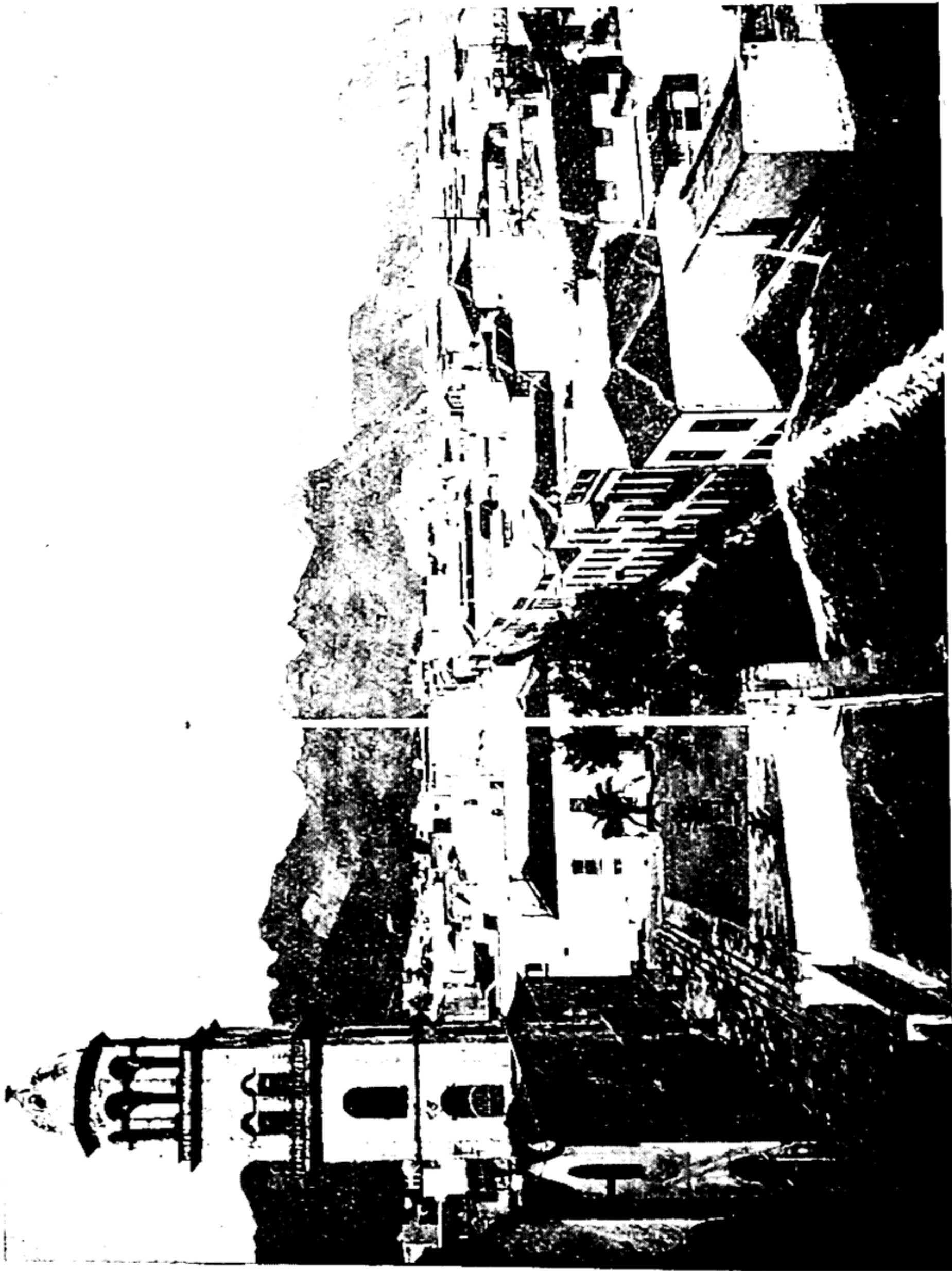
(4) **Dahomey** is inhabited almost entirely by natives of pure negro stock. There are few roads in the country, and *Porto Novo* is the chief business centre and the seat of government.

(5) **The Colony of the Upper Senegal and the Niger** includes the valley of the Upper Senegal, more than two-thirds of the course of the Niger, and much of the Sahara. *Timbuktu* is the chief town and is connected with *Koulikoro* by steamer. There is a railway from *Kayes* to *Koulikoro*, so that it is now possible to perform the whole journey from Europe to *Timbuktu* by steamer and rail.

(6) **The Upper Volta Colony** was formed in 1919. The centre of administration is *Ouaga-dougou*.

## Liberia.

This state is a negro republic on the Guinea Coast of West Africa. It was constituted in 1847 on the model of the United States. No white man is allowed to acquire citizen's rights. There is no standing army. The exports are coffee, cacao, palm-oil, ivory, and rubber. *Monrovia* is the capital, and *Great Bassa* is the chief port. English is the official language.



Santa Cruz, Teneriffe.

## Spanish West Africa.

The Spanish possessions in West Africa are (1) the Canary Islands, (2) Spanish Sahara, (3) Spanish Guinea, and (4) Fernando Po.

(1) **The Canary Islands** are a group of volcanic islands, of which the chief towns are *Santa Cruz*, in Teneriffe, and *Las Palmas* in Gran Canaria. The famous peak of Teneriffe is 12,000 feet high. The chief products are wines, cochineal, oil, cereals, and tobacco. It is of interest to note that "the meridian of Ferro was long accepted as the initial meridian for reckoning longitude, and on the discovery of America was the dividing line between the 'Eastern' and the 'Western' Hemispheres." It is still in use on German and Austrian maps.

(2) **Spanish Sahara** extends from Cape Blanco to Cape Nun and inland for about 170 miles. It is a granite plateau with little vegetation. *Rio de Oro*, the chief town, was known from an early date, as it is marked on a map of 1375.

(3) **Spanish Guinea** is a small tract, just north of the equator. It is cut off from the interior and is of no value for purposes of trade.

(4) **Fernando Po** is an island in the Bight of Biafra. Its northern half is almost entirely occupied by a volcanic peak (Clarence Peak) 9350 feet high. The island has a luxuriant vegetation, and the annual temperature is 78° F. Cacao, coffee, and cinchona are cultivated. *Santa Isabel* is the only town.

## British West Africa.

The British possessions on the West African coast are: (1) the Colony and Protectorate of Nigeria, (2) the Gold Coast, with Ashanti and Northern Territories, (3) Sierra Leone, (4) the Gambia Colony, and (5) the Islands of Ascension, St Helena, and Tristan da Cunha.

## Nigeria.

### Position and Extent.

Nigeria includes the whole of the lower basin of the Niger southwards from Ibo and a large portion of its tributary, the Benue. The country has an area of 332,000 square miles.

### Surface, Climate and Productions.

A good deal of Southern Nigeria, especially the land of the Niger delta, is flat and swampy. Not far inland there are hills of 2000 or 3000 feet, while in the north the land rises to 6000 feet. Southern Nigeria is very unhealthy; the mean annual temperature is about 84°, and the rainfall varies from 100 to 130 inches yearly. Northern Nigeria is fairly healthy; the rainfall is not so heavy; and the soil is fertile. The forests are beautiful and luxuriant, and Nigeria produces the best palm-oil of Africa. Cotton, indigo, rubber, hides, ivory, silver, tin, and lead are the other chief products. The hippopotamus is found in all the rivers, elephants roam the forests, and antelopes are very numerous.

### People and Industries.

This district has been a British Protectorate since 1900, when all the territories administered by the Royal Niger Company and the Niger Coast Protectorate were taken over. The population, estimated at 16,000,000, consists chiefly of negroes and Fulas, the former being pagans and the latter Mohammedans. The negroes are mainly engaged in agriculture; the bulk of the coast population are occupied in collecting palm-oil and rubber. Many of the Fulas are warriors or engaged in the slave-trade, though some are reverting to their early occupation of herdsmen. The native Hausa tribe is civilised and industrious. In Yoruba

and Lagos the natives work in leather, and show skill in weaving and dyeing cotton.

### Towns.

*Lagos* is the seat of government. The principal towns in the Niger delta are *Bonny* and *Old Calabar*. The chief town in Northern Nigeria is *Zungeru*, while *Kano* and *Sokoto* are of some importance.

## The Gold Coast.

### Position and Extent.

The Gold Coast stretches for 334 miles along the Gulf of Guinea and has an area of 80,000 square miles.

### Surface, Climate, and Productions.

The country is low-lying and rarely rises to 2000 feet. The principal river, the Volta, is navigable for small boats for 60 miles from the sea. The climate has generally been considered unhealthy; but much progress has been made in combating disease, and many Europeans now live in this country in health and comfort. The rainfall varies from 100 inches near the coast to 50 to 70 inches in the interior. The staple products and exports are palm-oil, palm-kernels, cacao, and india-rubber. The rivers in the western part yield gold-dust, which has given this district its name. Gold is also mined in considerable quantities and is exported to England.

### Towns.

*Accra* is the capital and most important town. *Cape Coast Castle* and *Elmina* are the chief trading towns. *Kumasi* is the native capital of Ashanti.

## Sierra Leone.

### Position and Extent.

Sierra Leone stretches along the west coast for 180 miles between Liberia and French Guinea. The area is about 27,900 square miles.

### Surface, Climate, and Productions.

The coastal region is low and swampy, but the northern portion is mountainous, rising to over 4000 feet. The climate is unhealthy and malaria and fever are prevalent. The average annual temperature is 83° F., and the rainfall varies from 138 inches at Freetown to 50 or 60 inches in the interior. The vegetation is dense and luxuriant. Coffee, cacao, tapioca, ginger, maize, cassava, and cotton are grown; and from the interior ground-nuts, kola-nuts, palm-oil and kernels, india-rubber, and gums are exported in large quantities.

### People and Towns.

The natives are negroes and in the interior are Mohammedans. Many of the coast-people are pagans or Christians. There is little agriculture and there are hardly any manufactures. *Freetown*, the capital, is now a fortified naval depôt and coaling-station.

## Gambia.

### Position and Extent.

The Gambia settlements extend for some distance along both banks of the Gambia and cover an area of over 4500 square miles.

### Surface, Climate, and Productions.

Much of the land is low-lying and swampy. The Gambia is navigable for a distance of 400 miles from

the sea, but is not much used. The climate is fairly healthy and the rainfall in the summer months is about 44 inches. The chief product is the ground-nut; the other products include hides, rice, cotton, kola-nuts, and india-rubber. The trade is mainly with and through the adjoining French colony, and less than half is with Great Britain.

### People and Towns.

The natives belong to the negro race, and are pagans and Mohammedans. *Bathurst*, at the mouth of the Gambia, is the only town of any note.

## Ascension Island.

Ascension, an isolated volcanic island 900 miles from the mainland, has an area of 34 square miles. Discovered by the Portuguese on Ascension Day, 1501, it was first occupied by the British in 1815. Green Mountain (2890 feet) has an excellent sanatorium. The island ceased to be a coaling depôt in 1887. Thousands of sea-turtle visit the island every year between January and May. *Georgetown*, the garrison station, is on the north-west coast.

## St Helena.

This lonely volcanic island, 1200 miles from the mainland, has an area of 47 square miles. The numerous rugged mountains reach a height of 2700 feet, and there are picturesque ravines. The climate is equable and salubrious. After its discovery in 1502 it was an important place of call for ships homeward bound from the Cape. The opening of the Suez Canal affected its prosperity and it is now visited by very few ships. Historically it is of interest as the scene of Napoleon's exile from 1815 to his death in 1821,

and in 1900 it was used for prisoners of war from South Africa. St Helena is an Admiralty coaling-station, but the garrison was withdrawn in 1906. *James Town* is the capital.

## Tristan da Cunha.

This rugged and precipitous island, with a few smaller islets, is about midway between South America and the Cape of Good Hope. Discovered in 1506 by the Portuguese and named after the captain of the expedition, this island was occupied by the British in 1816. The present inhabitants are the descendants of the British garrison, and are healthy and long-lived. There is no strong drink and no crime, and the oldest inhabitant acts as governor.

## CHAPTER X

### AUSTRALIA, NEW ZEALAND, AND THE PACIFIC ISLANDS.

#### Australia.

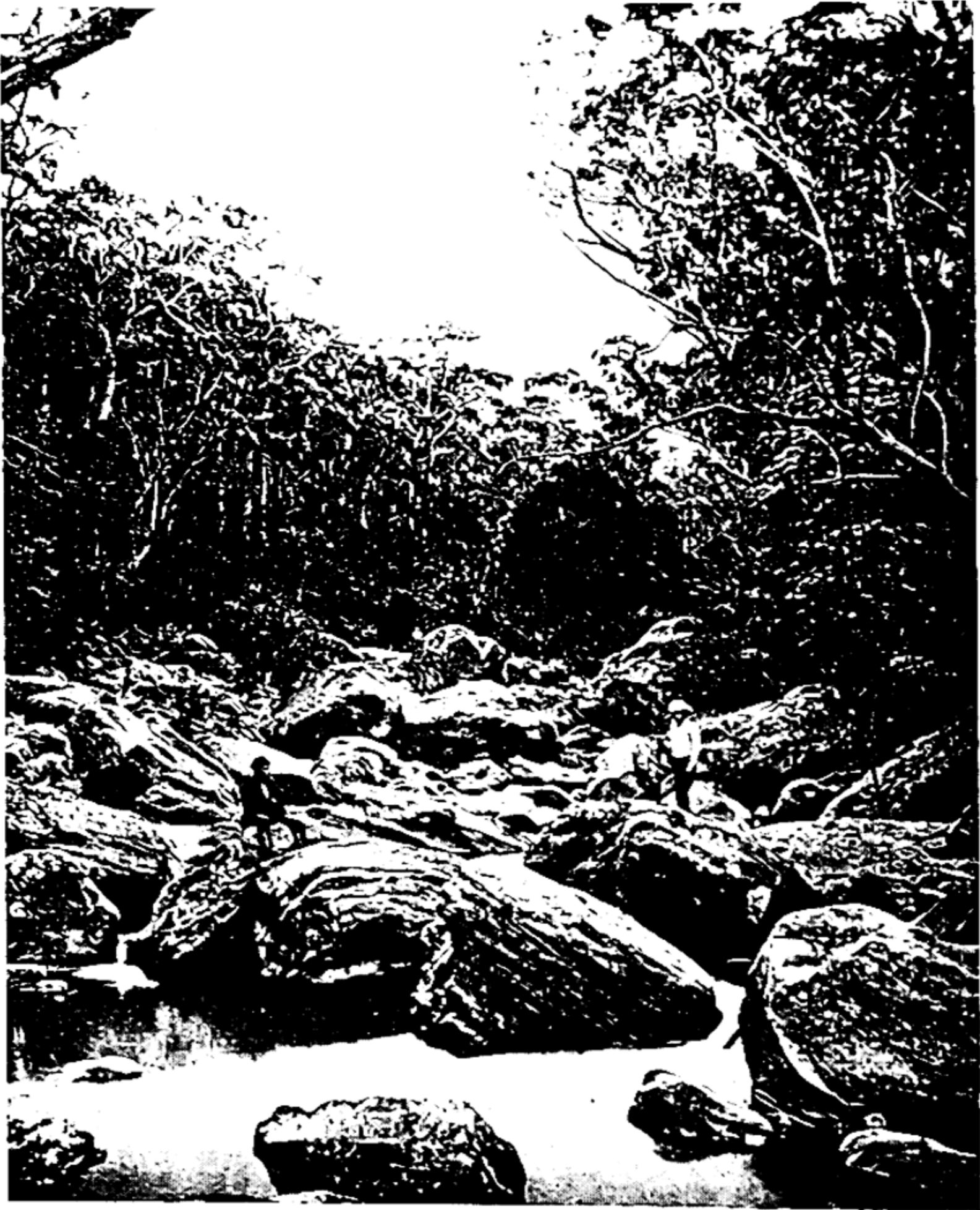
##### Position and Size.

The word Australasia means "Southern Asia," and this implies that Australia is a southern extension of Asia. This vast island, the smallest of the five continents, has an area of nearly three million square miles, and is thus about three-fourths the size of Europe, or nearly twenty-five times as large as the British Isles. By the shortest route, its nearest point is 11,000 miles from England. It is separated from New Guinea by Torres Strait, 90 miles wide, and is washed by the Indian Ocean on the north-west, west, and south, and by the Pacific Ocean on the east.

##### Surface and General Features.

The largest part of Australia is a plateau of very ancient rocks with a precipitous face outwards. The continent may be considered under three main divisions. 1. The western half of the continent is composed of a vast plateau, which, owing to the arid nature of the climate in the interior, is generally level. A few rivers rise on the border of the plateau and discharge flood-waters after rain; but in the dry intervals the rivers are mere lines of stagnant water-holes. The lower courses of the rivers are on the coastal plain

and, as the rainfall is heavier in these parts, the rivers may run throughout the year. 2. The second division in the structure of Australia consists of the



In the Blue Mountains.

Great Plains, which extend across the continent from the Gulf of Carpentaria to the Southern Ocean and comprise the basin of the Murray and most of Western Queensland. The Great Plains have an

arid climate and are traversed by many rivers, some of which rise on the higher country to the west. The Flinders flows northward into the Gulf of Carpentaria; some rivers flow southward to Lake Eyre; but most of the rivers are in the basin of the Murray, which consists of the Darling, the Murrumbidgee, and the Upper Murray. The Great Plains have a generally low level, and Lake Eyre is 39 feet below sea-level.

3. The third division of Australia comprises the East Australian highlands, which occur between the Great Plains and the east coast. They extend from Cape York in the north to Bass Strait in the south, and are continued into Tasmania. The Victorian Highlands are a westward projection of this long range, which is known by different names in various parts. The Blue Mountains, to the west of Sydney, and the Darling Downs, to the west of Brisbane, are the best known. The highest summit in Australia is Mount Kosciusko (7328 feet), which was so named because it resembles the artificial mound over Kosciusko's grave. With regard to the structure of Australia, we may note that the foundation of the plateau is generally granite. There are coal-bearing areas in the south-east. The central depression is of cretaceous age, and the higher edges of the plateau are all volcanic.

### **Rivers and Lakes.**

The Australian rivers are controlled by the distribution of the rainfall, and those having the largest volumes and rising in the East Australian highlands discharge into the South Pacific. The chief of these rivers are the Burdekin and the Fitzroy in Queensland, and the Clarence, the Hunter, and the Hawkesbury in New South Wales. The Snowy River discharges into Bass Strait, and the Yarra flows into Port Philip. From the western slopes of the East Australian highlands the Mitchell and Flinders flow into the Gulf of Carpentaria; the Diamantina and Cooper's Creek find their way into Lake Eyre; but the Darling, the Murrumbidgee,

and the Murray are by far the most important. These three rivers were originally independent, but they now flow into one trunk, the Lower Murray, and discharge into the Southern Ocean through Lake Alexandrina. There are times when the evaporation from the surface of this lake is greater than the river-water poured into it; then the Murray does not discharge into the sea, but the sea-water flows into the lake and finds its way some distance up the course of the Murray.

The other rivers of Australia are of little importance. In the northern territory, with its heavy rainfall, there are the Roper, Daly, and Victoria; and in Western Australia the chief rivers are the Ashburton, the Gascoyne, the Murchison, and the Swan River. The greater part of the western plateau is riverless, as the rain-water is lost by evaporation.

The lakes of Australia are few, and those of the interior—Eyre, Torrens, Gairdner, and Amadeus—are associated with the plateau structure of the continent. As already mentioned, Lake Eyre forms the reservoir of an inland drainage system, but it is shallow and during the dry season is little more than a series of pools and marshes. The Gippsland lakes, in the coastal plains of Victoria, are the unfilled remnants of a great estuary. In Western Victoria there are upwards of 145 lakes, of which Lake Korangamite is the largest.

### Coast.

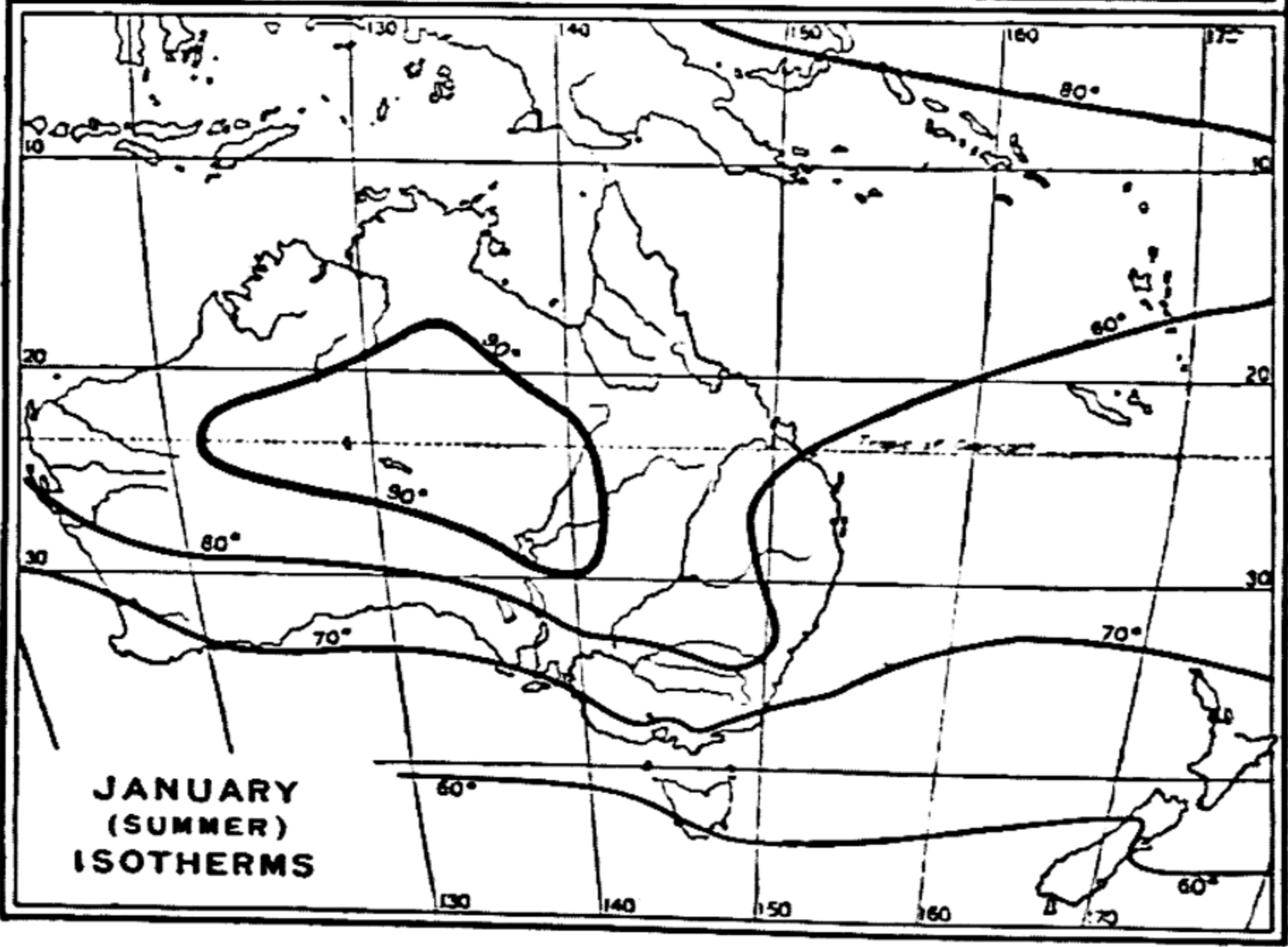
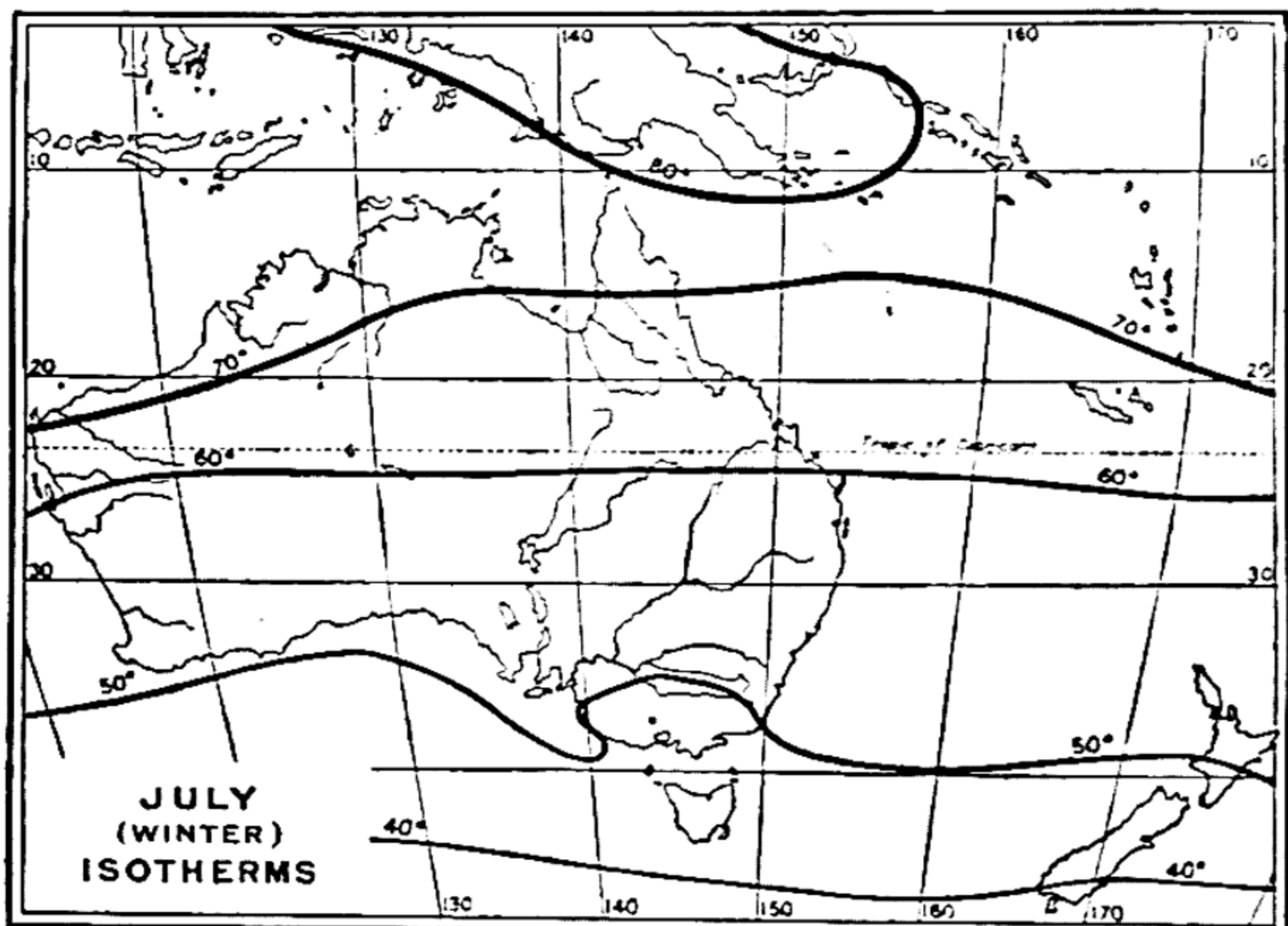
The coast line of Australia is remarkable for its long stretches of uniform character; the two peninsulas of Cape York and Arnhem Land, both projecting northwards, are the only two important deviations from the general outline. The Gulf of Carpentaria and the Great Australian Bight are two striking indentations, the latter consisting for more than 700 miles of a line of low limestone cliffs. There are few good harbours in Australia; the two gulfs, of Spencer and St Vincent, and Port Phillip are the most noteworthy on the south coast, while Port Jackson

on the east coast is one of the safest inlets. On the whole it will be found that the principal openings are on the east side and in some parts of the north-west. About one degree north of the Tropic of Capricorn there begins a series of coral-reefs, known as the *Great Barrier Reef*, which extends for a distance of nearly 1200 miles, advancing into Torres Strait, which it nearly closes. The reef is not continuous, but is broken up by many deep channels, which are of great importance to seamen, since they allow a choice of routes between the eastern seaports and Torres Strait. Owing to the protection which the reef affords, there is a calm sea between the coast and the Great Barrier Reef, and this route is preferred by steamers although the navigation is somewhat difficult at night. Even to the west of the Great Barrier Reef the navigation has been made difficult, for the 100 miles of sea between Cape York and New Guinea is crowded with coral reefs and sandbanks, besides being studded with many small islands. The channel most used is that north of the Prince of Wales Islands, one of which, Thursday Island, is much frequented by shipping.

The majority of the islands belonging to Australia are mere rocks and have little more than local importance. Tasmania is the largest, and is cut off from the southeastern portion of the mainland by Bass Strait, about 120 miles wide.

### Climate and Rainfall.

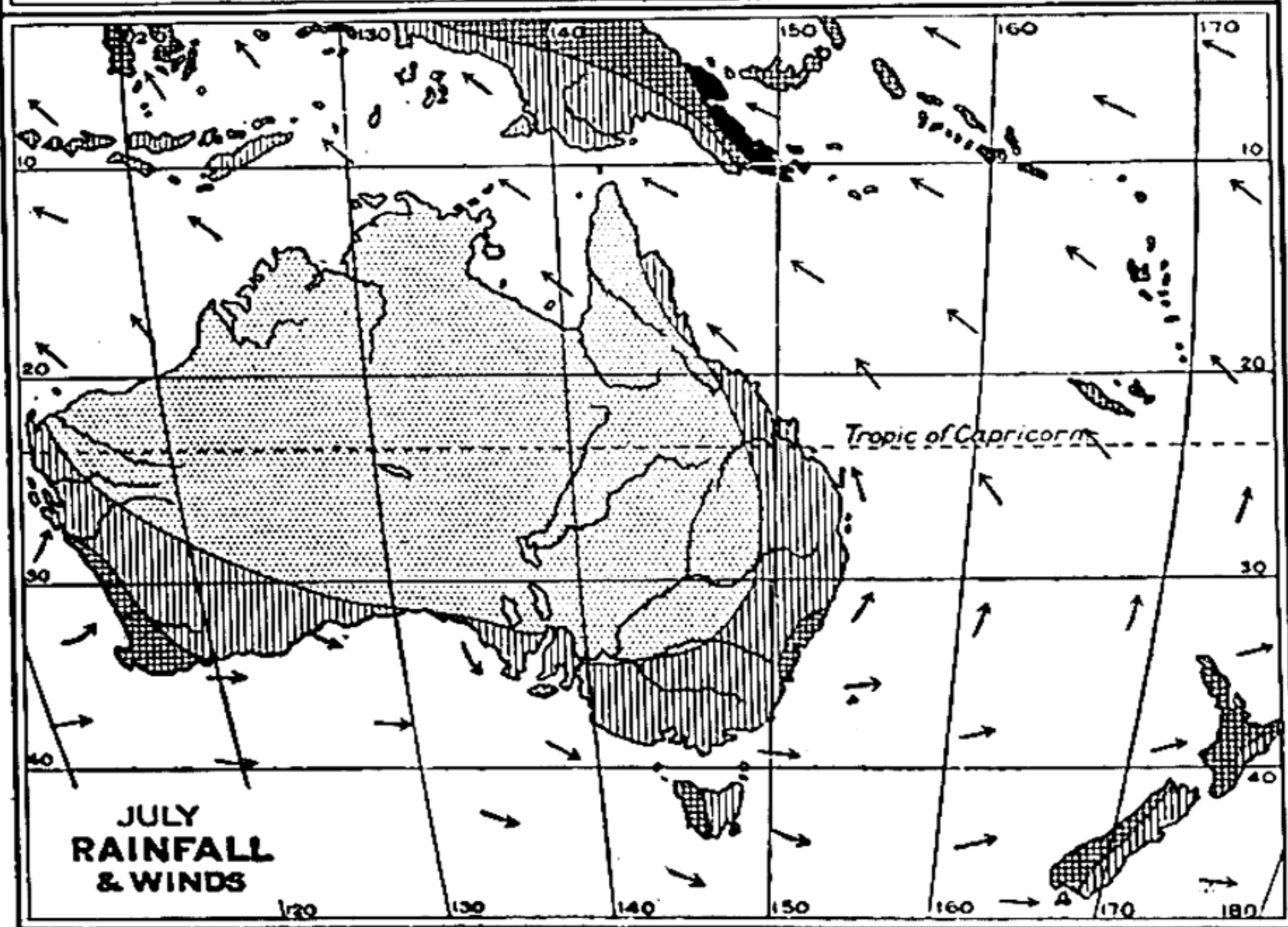
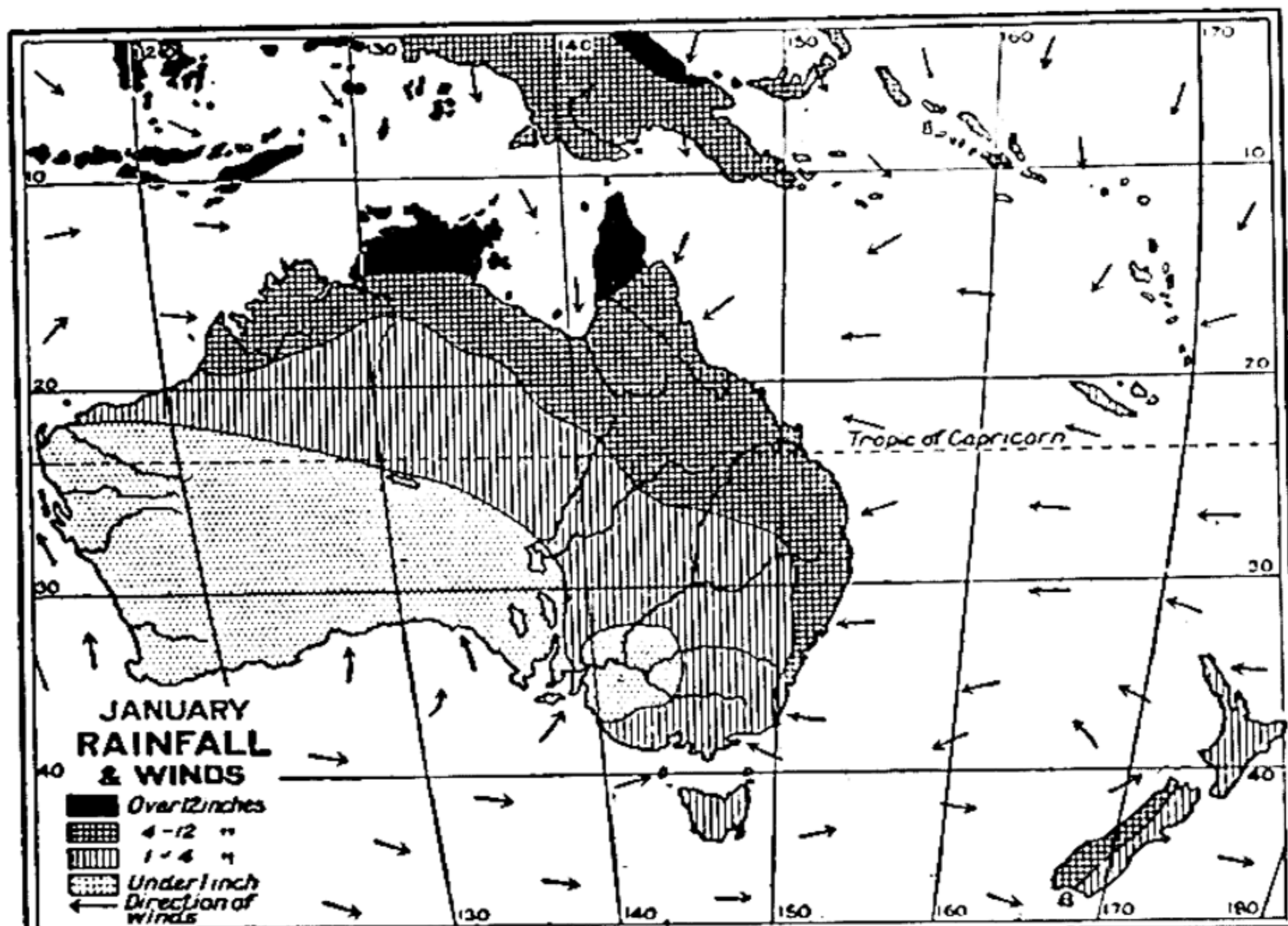
Australia, lying mostly within the temperate zone, has generally an equable climate; its position in the warmer part of the temperate zone gives it a mild climate. The Tropic of Capricorn crosses the continent in its widest part, but it will be seen that the greater portion of Australia is to the south of this line. In general the climate is thus hot and dry, and remarkably salubrious. During July the isotherms range from 50° F. in the south to 75° F. in the north but in January the temperature of the central region exceeds 90° F.



Australia is a relatively dry continent, and as a consequence there is much sunshine, owing to an absence of a cloud-screen between the land and the sun. The eastern coast is washed by a warm current flowing southward. The winds that blow over the shore from it are moist winds, and they drop their moisture in abundant rains over the East Australian highlands. The western and south-western coasts have winds coming from a cold sea to a warmer land. The air is warmed as it crosses the land, and it sweeps inland as a dry and parching wind. Hence the shores of the Great Australian Bight have a rainfall of 10 inches and the eastern coast on the same latitude has a rainfall of 60 inches. The rainfall is greatest on the north, east, south-east, and south-west coasts, the highlands causing much condensation. It decreases towards the interior, and in the Lake Eyre country it is as low as 6 inches. Further west, the interior of the western plateau may be considered a rainless region. Almost all parts of the continent which are more than 200 miles from the coast receive much less rain in the year than the driest parts of England. This rain, too, falls in latitudes where the heat and evaporation are much greater than in England, so that in summer the ground is parched and cracked, the grass withered, and little vegetation can be grown. A feature in the Australian climate is the uncertainty of the rainfall, and the consequent alternations of drought and flood, leading to great variations in the yield of the crops and in the number of sheep and cattle that can be reared on a given area.

### **Plants and Animals.**

The vegetation of Australia is altogether unique; it is essentially a land of drought-resisting plants, whose foliage has acquired a tough leathery texture that enables it to resist the effect of excessive evaporation. These plants have their leaves edgeways to the sky and heat; some have a thick sap which evaporates slowly; some have tough leaves which the heat cannot



penetrate ; and many have converted their leaves into prickles and spines. There are tropical forests in the north with mangrove and rubber trees, but the highlands are rich in wood, such as that of the gum-trees (eucalypti), which grow to a height of 250 feet ; some of them have measured as much as 400 feet. On the tablelands and plains of the interior an Australian forest is open and easily traversed ; but the forests become thinner and thinner the scantier the rainfall, and pass into dense thickets of dwarf acacias and eucalypti which go by the general name of " scrub." The " wattles " or acacias abound everywhere and are a characteristic feature of Australia, with their lovely yellow blossoms and fragrance all through the year. Owing to the great variety of climate and soil, most European trees and plants have been successfully introduced into Australia ; the Scotch thistle has proved a serious nuisance. Wheat is grown on the southern plains ; fruit in Tasmania ; sugar, tea, and cotton in Queensland ; and there are extensive vineyards in Victoria, New South Wales, and South Australia.

The Australian animals are even more peculiar than its plants. The mammalia of other lands are totally wanting here, with the exception of the dingo and some rats and mice, while the marsupials, such as the kangaroo, opossum, and wombat, are really typical Australian animals and are not found in other parts of the world. The birds of Australia are remarkable for their beautiful plumage, and besides the parrots and cockatoos we may note the emu, cassowary, bower bird, lyre bird, and honey-eater. Snakes are common, most of them being poisonous. Many of the European domestic animals have been introduced, particularly sheep, cattle, horses, and the rabbit, the last of which has proved a great pest. Climatic conditions determine that Australia shall be of most value as a pastoral country, and one suited for sheep rather than cattle. The success of the sheep-rearing industry is due to the dry warm climate and the vast areas of

open grassy plains. The total number of sheep in Australia is estimated at about 80,000,000. Cattle-rearing is an important industry in the East Australian highlands, and dairy-farming is carried on in the Victorian valley and on the coast plains.

### Minerals.

The most important mineral has hitherto been



At an Australian sheep-farm.

gold, found in all the Australian States, but more especially in Victoria and New South Wales, and of late years in West Australia. The other minerals of importance are copper in South Australia and New South Wales ; tin in Queensland and Tasmania ; and silver in New South Wales. There are great coal-fields in New South Wales and Queensland, and iron is found in almost all the States.

## The People and their History.

The population is over 5,000,000, but of these the native Australians are comparatively few in number, and appear to be fast dying out. These natives are of a dark coffee-brown complexion, and though not far short of the average European in height, they are much slimmer and feebler. When Tasman discovered Australia in 1642, the island was named New Holland; but the east coast remained unknown until visited by Captain Cook in 1770. The first inhabitants sent from the British Isles were convicts; and the first convict-ship arrived at Botany Bay, in New South Wales, in 1788. Free settlers soon began to arrive, and in course of time five separate states were founded on the mainland and one in Tasmania. The settlers are now mainly from the British Isles, but there are a good many Germans. Chinese and Polynesians have been introduced into the tropical parts of Australia, but since 1906 no Pacific Islanders are allowed to enter Australia. The average density of population is about 1·5 to the square mile, and most of the people are distributed in the south-east of the continent or on the coastal districts. There is no state church in Australia, but the Church of England has the most numerous adherents, and Roman Catholics, Presbyterians, and Methodists are the next in importance. Education is free and compulsory, and there are universities at Sydney, Melbourne, and Adelaide. Libraries, museums, botanical gardens, and schools of art are multiplying in all the states.

## Administration.

Each of the six Australian States was allowed a separate parliament as soon as it grew to sufficient importance to manage its own affairs. Western Australia was the last to gain this recognition in 1890. In 1900, however, the Australian Commonwealth was constituted by the Imperial Parliament, and was proclaimed on

January 1, 1901. The six original states, with the Northern Territory and the Federal Territory, form the Commonwealth, and the legislative authority is vested in the Senate and the House of Representatives, while the Governor-general represents the British Sovereign. The Federal Parliament legislates on all matters affecting the Commonwealth as a whole, while each state has its own Governor, Legislative Council, and Legislative Assembly. In 1905 the administration of Papua was transferred to the Commonwealth. The site for the Federal Capital is Canberra, in the district of Yass, in New South Wales.

### **Industries, Manufactures, and Trade.**

The industries are mainly pastoral, mining, and agricultural. With the exception of the minerals, the commercial products of Australia are chiefly derived from animals and plants introduced by European settlers. The chief and most general staple produce of Australia, and that which constitutes its largest export, is wool. Sheep thrive remarkably well and the wool is of the finest quality, realising the highest prices in the English market. European cereals are produced and wheat is exported. Dairy-farming and stock-raising are making wonderful progress. The vine is extensively cultivated and wine is sent out in large quantities. Fruit-growing and the sugar-cane industry are of increasing importance. Victoria, Queensland, New South Wales, and Western Australia export gold, and New South Wales sends coal to the other states. The great feature of Australian commerce consists in the export of the staple production of the various States to the United Kingdom, and the import of British manufactured goods. The trade of Australia exhibits a remarkable development, the average of trade per inhabitant being about five times that of Europe. Throughout the Commonwealth there are uniform customs duties, and trade between the States is free. There are at present few manufactures, although woollen

goods and machinery are manufactured to a small extent, and there are numerous industries connected with furniture and the book trade.

### Communications.

Railways and telegraphs have been increasing rapidly since 1870. There is now railway connexion from Adelaide via Melbourne and Sydney to Brisbane ; and there are shorter lines in the various States. Most of the railways belong to the States, and the length of government railways is 21,000 miles. The Trans-Australian railway from Port Augusta in South Australia to Kalgoorlie in Western Australia was completed in 1917.

Since 1872 Australia has been connected by electric telegraph with the rest of the world by the overland line, which crosses Australia from Adelaide to Port Darwin and is there connected with a cable which passes under the sea to Java. A cable completed in 1902 connects Vancouver with Queensland and New Zealand.

All the States are now in regular steam communication with Europe and America. The sea-passage between Adelaide and Plymouth may be covered in 35 days ; and mails from London via Brindisi have been delivered in Adelaide in 29 days. The chief British shipping companies trading with Australia are the Peninsular and Oriental Company, Orient Line, Aberdeen Line, Shaw Savill and Albion Line, and White Star Line.

## Victoria. ✓

### Position and Extent.

Victoria is situated at the south-eastern extremity of Australia, of which it occupies about one thirty-fourth. The area is 87,884 square miles, which is equal to that of Great Britain.

## Surface.

The East Australian highlands, known as the Dividing Range, traverses the state from east to west at a distance of 60 to 80 miles from the coast. The eastern portion, known as the Australian Alps, has peaks reaching 6500 feet. There are thus two main drainage areas: a series of rivers flows north from the highlands, forming the Murray and its southern tributaries, while another series flows southwards to the sea. Many of these rivers are in the summer mere chains of water-holes, and only the Murray and Yarra are navigable. The volcanic plains of the west are dotted with lakes and swamps, many of which have no outlets and are salt. The plains to the south of the Dividing Range are well watered, clothed with good grass, and often thickly covered with trees. This is specially characteristic of Gippsland in the south-east. In the north-west is a district known as Wimmera, mainly a waterless desert, but with some irrigation works. The only good natural harbour is the land-locked basin of Port Phillip. Wilson Promontory has beautiful scenery of small bays backed by lofty tree-clad ranges and with clusters of small islands. The other islands are Lady Julia, Percy, Phillip, and French.

## Climate and Rainfall.

From its geographical position, Victoria is more temperate than any other part of Australia and is consequently more suited to settlers from Europe. For a few days in the year the thermometer may register upwards of 100° in the shade, and for a few nights it may fall below freezing-point. The average annual rainfall is 25 inches, varying from 40 inches in the south-east to 14 inches in the north-west.

## Plants and Animals.

The dominant general features of the Victorian flora are determined by the necessity of protection against

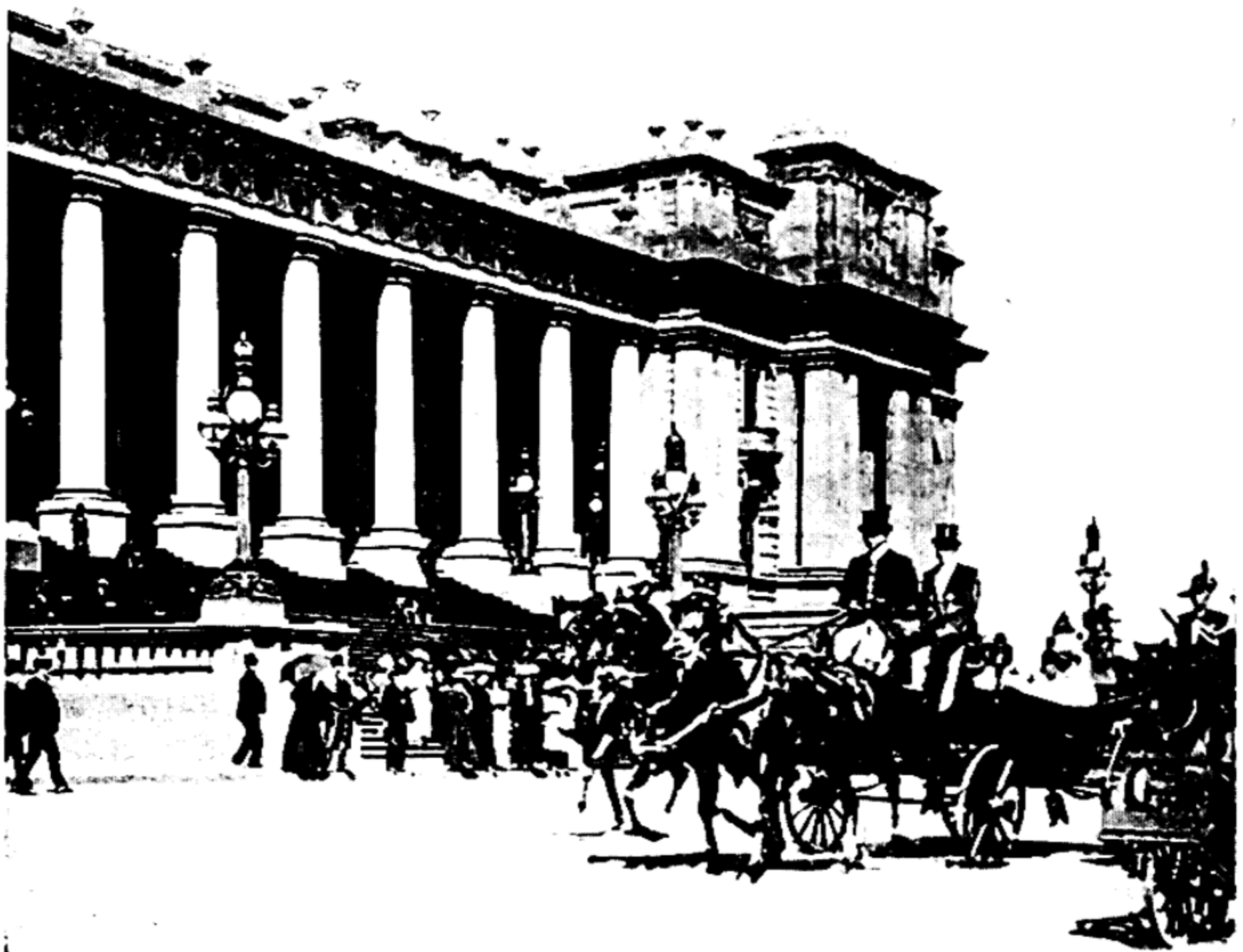
periodic droughts and intense sunshine. The forest trees have vertical leaves, with the result that they yield little shade. The native species of Victoria include the eucalyptus and acacia, but the chief feature of the native flora is the small number of useful economic plants it contains. A few of the forest trees produce good timber, but much of it is generally too hard, heavy, and brittle to be of value. There has been an enormous consumption of timber for mining purposes, and there is now actually importation of timber into the state. In Victoria the Australian fauna is typically developed. The larger kangaroos are disappearing, but the wallabies and kangaroo-rats are plentiful. The opossum family is numerous, and the wombat and platypus are represented. Of the birds, the Victorian lyre-bird is the best known, the emu is common, and wild-fowl, lories, and honey-eaters are plentiful.

## People and History.

The population in 1911 was 1,315,551, which gives 15 persons to the square mile, so that Victoria ranks second among the Australian States, and first with regard to the density of population. Of this total no less than 700,000 belong to Melbourne, which, after Sydney, is the most populous town in Australia. There are only about 400 aborigines in Victoria, but there are upwards of 7000 Chinese. The bulk of the people are of British origin. Victoria formed part of New South Wales till 1851; in 1855 it received responsible government. The most important event in Victorian development was the discovery of gold, which led to an enormous influx of settlers. Education is free and compulsory. There is a university at Melbourne, and there are colleges, technical schools, and primary schools all over the State. There is no established church, but the adherents of the Church of England are in a large majority.

## Resources, Industries, and Trade.

The chief crop is wheat, the other cereals are grown, and wine, brandy, grapes, and raisins are produced. The chief product, however, is wool, the finest qualities being obtained from millions of sheep. Of the minerals, gold is the most important, although the yield is de-



Melbourne: the Houses of Parliament.

creasing. It is estimated that Victoria has produced £287,523,134 in gold since its discovery in 1851. This vast sum represents more than half the total produced by the whole of the Commonwealth. Fruits of all kinds are grown for export, and the fisheries are of some importance. The manufactures are increasing, but are

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almost entirely for home consumption. The chief trade is with Britain, which receives wool, wheat, butter, frozen meat, hides, skins, tallow, etc. to the value of upwards of £10,000,000, and sends more than £11,000,000 worth of manufactured textiles, iron and steel, machinery, wearing apparel, books, etc.

### Communications.

With one exception, all the railways are the property of the State, which controls 3888 miles. The chief towns are connected by railway, all the lines radiating from Melbourne, through which the greater part of the imports and exports pass.

### Towns.

*Melbourne*, the capital and chief seaport, is situated on the Yarra, a short distance above its mouth in the upper part of Port Phillip Bay, a shallow sheet of water having a large extent of safe anchorage. The largest vessels now pass through a new channel into a dry dock in the heart of the city. Besides the Houses of Parliament, it has many fine public buildings, as well as parks and botanic and zoological gardens. *Ballarat* is the second town of importance and was one of the earliest gold-mining centres. *Bendigo* is another gold-mining town. *Geelong*, with a good harbour, is the chief seat of the woollen industry. *Castlemaine*, *War-rambool*, *Wonthaggi*, *Maryborough*, and *Stawell* are other important towns.

## Tasmania.

### Position, Extent, and Surface.

Tasmania, the island state of the Commonwealth, is at the southern extremity of Australia, from which it is separated by Bass Strait, 120 miles wide. It has an area of 26,215 square miles, and is the smallest of the Australian States. The whole surface of the

island is diversified with forests, rich valleys, plains, and mountains which rise to 4000 and 5000 feet. With the exception of some of the western parts of the island, which are densely wooded, and where the coast is rugged and exposed to frequent storms, the island is more or less dotted over with settlers. Tasmania is well watered, and the Derwent and Tamar are the two chief navigable rivers. Near the middle of the island are some fresh-water lakes, of which Great Lake, 3800 feet above the sea, is the largest.

### **Climate, Plants, and Animals.**

The climate is very healthy and genial. At Hobart the mean maximum temperature is about 63° and the mean minimum 45°. The rainfall is very variable. Hobart has from 21 to 29 inches a year, but the west and south-west coasts are very wet, having from 85 to 116 inches a year. The Tasmanian climate is so pleasant that a great number of persons visit it every year to escape the heat and dust of the adjacent continent. The plants and animals of Tasmania are almost identical with those of Australia. The eucalypti are often over 280 feet high, and there are magnificent tree-ferns and fragrant wattle. All Tasmanian trees and shrubs are evergreen. Among the mammals, the platypus is the most remarkable. The marsupials include the Tasmanian devil and the native tiger.

### **People and History.**

The island was discovered by Tasman in 1642 and was originally a dependency of New South Wales. It was first settled by the British in 1803, and was made independent in 1825. In 1856 it received representative government, and has now a Governor appointed by the Crown and a Parliament of two Houses. The population in 1911 was 191,211. The aborigines are now quite extinct, and the bulk of the people are of British origin.

## Resources, Industries, and Trade.

Tasmania has a climate and soil suitable for all English crops, and wheat and oats are extensively grown. The fruit industry is of great importance, and two-thirds of the apple crop is exported to English markets. The principal timbers exported are the blue gum and the stringy bark. The mining industry is an important one ; and gold, silver, copper, and tin are raised in large quantities and exported to the value of nearly £1,500,000 annually. Sheep-rearing and agriculture are the main occupations of the people. There are 643 miles of railway, the main line running from Hobart to Launceston. The chief exports are wool, copper, tin, silver, gold, and fruit.

## Towns.

*Hobart*, the capital, is a very picturesque town on the Derwent. It has a fine harbour, some manufactures, and a delightful neighbourhood. *Launceston*, the chief town of the north, is situated on the Tamar.

# New South Wales.

## Position and Extent.

This State was so named by Captain Cook, who was reminded of Wales by the appearance of the mountains as seen from the coast. The name was formerly applied to the whole of the eastern part of Australia, but is now given to the land which lies almost entirely between  $29^{\circ}$  and  $36^{\circ}$  S. lat. and between  $141^{\circ}$  and  $154^{\circ}$  E. long. Its area is 310,372 square miles, which places it fourth among the Australian States in point of size.

*Norfolk Island*, 1100 miles from Sydney, formerly a penal settlement, and *Lord Howe Island*, between Sydney and Norfolk Island, both belong to New South Wales.

## Surface.

The East Australian highlands, which extend from Cape York to Wilson Promontory, pass through New South Wales in a series of ranges known as the Australian Alps in the south, the Blue Mountains near Sydney, and the Liverpool range and New England Hills in the north-east. The highest peaks are Mount Townsend (7260 feet) and Mount Kosciusko (7328 feet). These mountains form a fairly continuous barrier between the coast lowlands and the interior plains and tableland which extend to South Australia. The mountains give rise to short, rapid streams towards the sea, but to long, slow rivers to the west. The southern region is drained by the Murrumbidgee, the Lachlan, and smaller streams, and the northern plateau is watered by the Darling, which, rising in Queensland, flows for 1000 miles through New South Wales before reaching the Murray. The treeless plains north of the Murray are known as the Riverina. The dry interior has few streams, and the only lake of importance is Lake George in the southern ranges.

## Climate and Rainfall.

The weather is chiefly determined by anti-cyclones, or areas of high barometric pressure, in which the winds blow spirally outward from the centre or maximum. New South Wales is particularly free from cyclones, and, generally speaking, the prevailing winds in the summer are from the north and in winter from the west. January is the hottest, and July the coldest, month. The climate of New South Wales is similar to that of southern France and Italy. The rainfall is extremely variable; in the coastal districts it varies from 30 inches in the south to 70 inches in the north. The rainfall decreases to the west, and there, owing to the absence of mountain ranges, does not exceed 10 inches. Sydney has a mean temperature of 63° and an average rainfall of 48 inches.

## **Plants and Animals.**

Forests cover much of the tablelands and interior plains, and the eucalyptus tree prevails throughout the State; but acacias are common, and pines, cedars, and palms are found in the north-east. The native animals are mainly marsupials, including the kangaroo, opossum, and wombat. Birds are of great variety and of beautiful plumage, with powers of mimicry and, in some cases, of song. Lizards and snakes are numerous; fish are abundant in the rivers and on the coast.

## **People and History.**

New South Wales is the oldest of the Australian States, and down to 1840 it included the whole of Australia east of the 135th meridian. The history of Australia begins with the landing of Captain Cook in New South Wales on 23 August, 1770; but it was not till 26 January, 1788, that Captain Phillip took formal possession of the whole of the eastern part of Australia. New South Wales assumed its present area and received responsible government in 1859, and now stands at the head of the States in population, which amounted to nearly 1,700,000 in 1911. There are two Houses of Parliament, and the Governor is appointed by the Crown. There is no state church; the Church of England claims nearly one-half the population. There is a good system of education, and a fine university at Sydney.

## **Resources, Industries, and Trade.**

The rocks are rich in gold, silver, lead, copper, and tin. Gold was first worked in 1851 near Bathurst, but coal is now the most valuable mineral and gives employment to thousands of miners, especially at Newcastle, Illawarra, and Lithgow. The coal is exported to the other states, and to India, China, and America. New South Wales is, however, the pastoral state, and from its millions of sheep, the people derive great wealth. Besides the mining and pastoral in-

dustries there are some manufactures, chiefly connected with metal-working and machinery, clothing, and printing. The commerce of New South Wales is the largest of all the Australian States, and shows a steady increase. The trade of this State with the United Kingdom is greater than with any other country, and amounts to £23,000,000 annually.

## Communications.

In the settled districts there are good roads, and the railways (4679 miles) are controlled by the State. The greater part of the tableland of New South Wales has its traffic brought to Sydney by the railway across the Blue Mountains.

## Towns.

*Sydney*, the capital and chief seaport, having a population of 637,000, is on Port Jackson. It is the oldest city in Australia, has a magnificent harbour, and, with coal and iron in the neighbourhood, is sure to thrive. It has fine public buildings and gardens, including the oldest botanical garden in Australia. Both the Centennial Park and the National Park to the south have magnificent forest, mountain, and river scenery. Sydney is a naval station and is strongly fortified. *Newcastle*, on the estuary of the Humber River, is the chief coal-mining town. *Parramatta*, at the head of Port Jackson, in a district noted for its oranges, has the residences of Sydney merchants. *Bathurst* is the centre of the chief wheat-growing district. *Broken Hill* and *Silverton*, near the western frontier, are the towns in an extensive silver-yielding area. *Goulburn* is the centre of the inland trade of the south.

## Queensland.

### Position and Extent.

Queensland, the great north-eastern State of Australia, has an area of 670,500 square miles. It is more than five times the size of the British Isles, and exceeds the area of any country in Europe, except Russia. The most northerly point of the mainland is Cape York, and the southern boundary generally follows the parallel of  $29^{\circ}$  S. lat. Its extreme length is about 1200 miles, and at its widest part it measures 1050 miles. Queensland includes all the islands in the narrowest part of Torres Strait.

### Surface.

The coast line is 2250 miles in length, and the eastern coast is unique, as it is protected from the Pacific for a distance of over 1000 miles by the Barrier Reef, a gigantic coralline structure. The inner route has been completely surveyed and is navigated by steamers of the largest tonnage. The surface of Queensland consists mainly of tableland above 1000 feet in height. The East Australian highlands run parallel with the Pacific coast and in the south are known as the Darling Downs, on which are some of the finest pasture lands in the state. From the main range the land slopes gradually westward to the South Australian border. The highest mountain in Queensland is Mount Bartle Frere, near Cooktown, which is 4350 feet high.

The rivers on the east coast are short, but those rising on the western slope of the main range are longer, and flow across Queensland into Lake Eyre. The longest rivers on the east coast are the Brisbane, Mary, Burnett, Fitzroy, and Burdekin, and those on the western highlands are the Macintyre and Condamine. Several of the rivers falling into the Gulf of Carpentaria, such as the Gilbert, Flinders, and Leichhardt, are fine streams.

## Climate and Rainfall.

Broadly speaking, there are three climates in Queensland : (1) the coastal climate, marked by comparative evenness of temperature ; (2) the inland climate, which is characterised by a wide range of temperature ; and (3) the far interior climate, with the heat of summer and the cold of winter of a more intense kind. The mean annual rainfall varies considerably ; along the Pacific coast it ranges from 48 inches at Brisbane to 150 inches in the north, and west of the main range it diminishes from 30 inches to about 10 inches on the western border. The State is subject to seasons of drought occasioning loss in sheep and herds.

## Plants and Animals.

In this large State, two-thirds of which lies within the tropics, with a wide variety of climate and soil, there is naturally great diversity in plant and animal life. The flora is generally of the Australian type, and here are found the red cedar, hoop pine, and other excellent timbers, with a profusion of palms, bamboos, tree ferns, and orchids. The fauna comprises most of the common Australian species, besides some peculiar to the region, such as the tree-kangaroo. The imported rabbit is a great plague. Among the typical birds are the pelican and cassowary. Crocodiles are found and snakes abound. Turtles are caught off the coast, where edible and pearl oysters, sea-slugs, sponges, and corals also swarm.

## People and History.

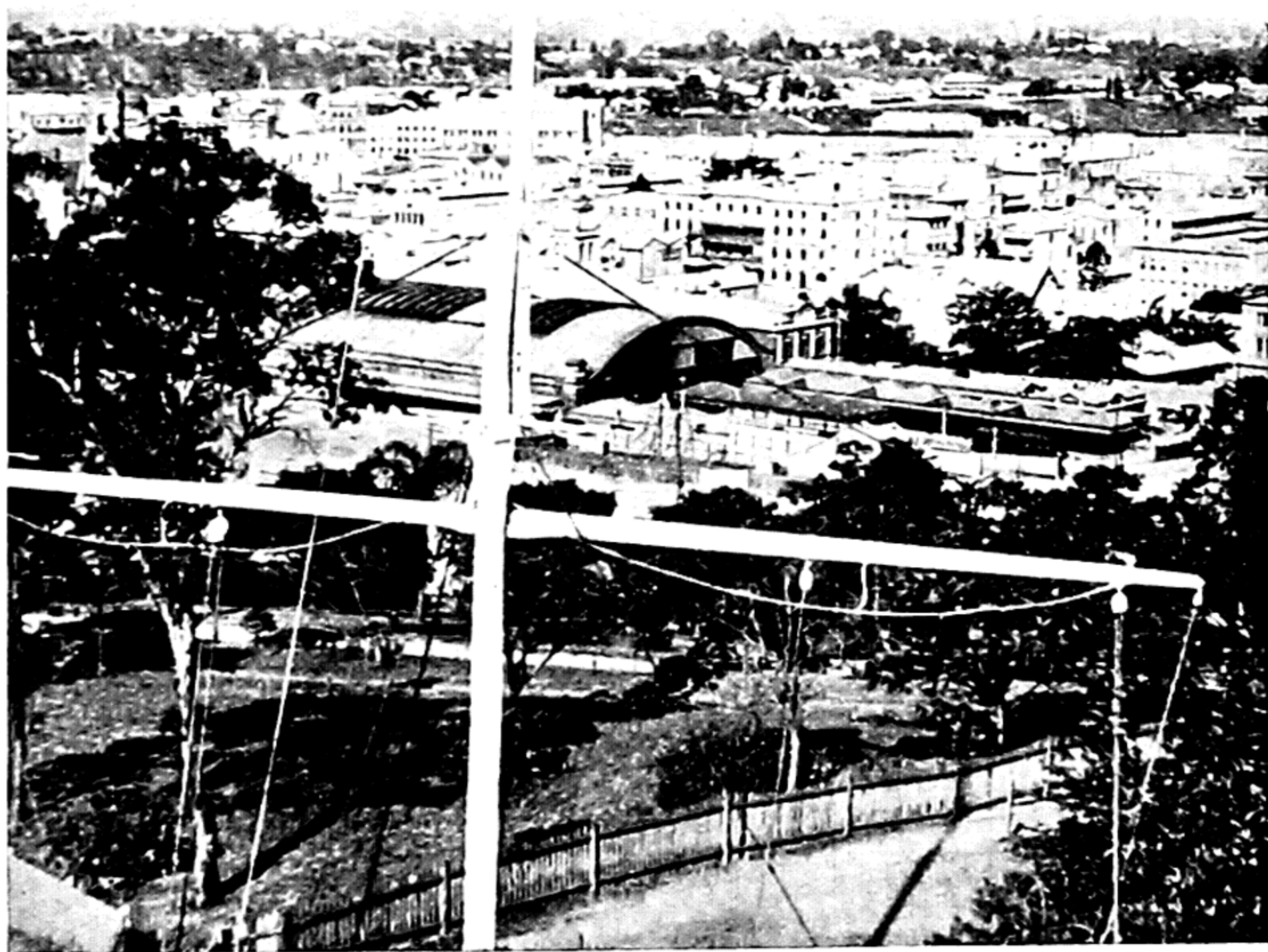
The aborigines of Queensland are decreasing and do not now exceed 20,000. The total population of the State in 1911 was 605,813, the majority of whom were of British origin. Of this number no less than 141,127 were in Brisbane. The population is more mixed than that in most of the other states, owing to the large number of Asiatic people. The influx of

## 360 X. AUSTRALIA, NEW ZEALAND, ETC.

Pacific islanders, or Kanakas, is now prohibited. Queensland was separated from New South Wales in 1859, and has since had responsible government.

### Resources, Industries, and Trade.

The industries of Queensland are mainly pastoral, agricultural, and mining. The pastoral industry is by



Brisbane.

far the most important, and there is increasing wealth in the yield of wool, hides, meat, and tallow. The chief crops are sugar, wheat, and maize, while bananas, grapes, pineapples, and oranges are abundant. The forests abound in useful timbers, such as red and white cedar, Kauri pine, and rosewood ; and the mines yield

gold, copper, and coal. The manufactures are developing, and clothing, food-stuffs, and machinery are increasingly produced. The three main products and exports of Queensland are wool, gold, and sugar; and these are followed by meat, hides, tallow, pearl-shell, and butter. About two-thirds of the oversea trade is with the United Kingdom.

### Communications.

There are 5214 miles of railway open for traffic and many miles under construction. Brisbane, Rockhampton, and Townsville are the starting-points of the railways, which are being laid into the better parts of the State and mark the routes of the pastoral settlement. It is expected that the far north of Queensland will soon be connected by rail with all the other states of Australia.

### Towns.

*Brisbane*, on a river of the same name, is the capital, and the port and trade centre of a rich area of country. It has some fine public buildings and parks, and the suburbs are of great natural beauty. *Rockhampton*, the chief port of central Queensland, is prettily situated on the Fitzroy river. It is the outlet for the pastoral produce of that region, and vessels of large tonnage can now reach the city wharves. *Townsville*, with its splendid harbour, is the principal port of north Queensland and the outlet of the sugar-growing, grazing, and mining district. *Charters Towers* is the second largest city in Queensland and the centre of the premier gold-field of the state. *Toowoomba* is the commercial capital of the Darling Downs. *Gympie* is a mining city; *Lilleyborough* is its port. *Ipswich* has railway workshops and woollen and cotton mills. *Cairns* is an important seaport on Trinity Bay, one of the best known tourist resorts in Australia.

## South Australia.

### Position and Extent.

South Australia extends southwards from the 26th parallel and lies between Queensland, New South Wales, and Victoria on the east and Western Australia on the west. The area is 380,070 square miles.

### Surface.

The coast is indented by Spencer Gulf and Gulf of St Vincent, having Yorke Peninsula between them. Eyre Peninsula is west of Spencer Gulf, and then follows the Great Australian Bight. To the south of the gulfs is Kangaroo Island, which is separated from the mainland by Backstairs Passage and Investigator Strait. A chain of mountains, the Flinders Range, runs from the south-east to the Lake District depression, but few points rise to 3000 feet.

The Murray river has its mouth in South Australia, and the Torrens and a few other short streams also reach the sea. Salt lakes, such as Torrens, Gairdner, and Eyre, are inland and receive the waters of a vast extent of country.

### Climate and Productions.

The climate is dry and warm, and the hot wind from the north is trying to the weak. Adelaide has experienced  $116^{\circ}$  in the shade, but its mean temperature in January is  $74^{\circ}$  and winter is remarkable for its uniform mildness and absence of frost. Droughts are of common occurrence and the rainfall varies from 21 inches at Adelaide to 5 inches farther north. Most of the inhabitants live in the temperate south-east, which receives a fair supply of rain, chiefly in winter.

Marsupial animals are numerous, and the white ant is very destructive. The mulberry is cultivated for silkworms, and, in spite of drought, cereals are the most

important crops—indeed, South Australia is facetiously named the “farinaceous” state. Irrigation is practised in the drier parts of the State, and at Renmark, a district on the Murray river, extensive irrigation works have been constructed. There are many sheep stations ; dairying and poultry-farming are extensively practised ; there are ostrich farms ; and much wine is produced. The chief articles of export are bread stuffs, skins and hides, meats, wine, and copper. Among the industries are furniture-making, machinery, flour-milling, and cement-making.

### People and History.

South Australia was founded in 1834 and the first colonists were sent out in 1836. The discovery of copper ore in 1843 drew many people to this State, which received responsible government in 1856. At the last census the population was 408,558, of which Adelaide and its suburbs claimed nearly one-half. The aborigines number several thousands, but are yearly decreasing. The state primary system of education is compulsory and free, and the higher grades of education have a university, school of music, and various colleges.

### Communications and Towns.

Railways to the extent of nearly 2221 miles are open, and it is contemplated to join Adelaide with Port Darwin by a railway over 1000 miles in length. A transcontinental telegraph line between these two towns has been in working order since 1872. *Adelaide*, the capital, is a model Australian city and stands on the river Torrens. The city was founded in 1836, receiving its name from Adelaide, the queen of William IV. The streets are wide and regularly laid out, and among the many fine public buildings may be named the university. *Mount Gambier* is the centre of a charming and productive district, with extinct volcanoes and luxuriant vegetation.

## Northern Territory.

### Position and Extent.

The Northern Territory, familiarly known to its inhabitants as the "N.T.," has an area of 523,620 square miles. It extends from the 26th parallel to the Indian Ocean and lies between Queensland and West Australia.

### Surface, Climate, and Productions.

Much of this vast area is practically unknown, but the northern portion is well watered by rivers, such as the Victoria, Daly, Adelaide, Alligator, and Roper, many of which are navigable for some distance by sea-going vessels. Along the bends of these rivers there are large tracts of undulating country suitable for agriculture. The northern coast is much indented and is bordered by several islands.

The climate is tropical, and over a great area the monsoon rains fall with great regularity. From Port Darwin to Roper Bar the rainfall diminishes from 60 to 20 inches, and the rain falls solely over this area during the summer season. For the remainder of the year there is the dry season, when each day is fair and cloudless.

The products are gold, tobacco, maize, sugar, rice, and cotton. There is some pearl-fishing on Melville Island, and trepang, or *bêche-de-mer*, is a valuable article of commerce.

### People and History.

The population, excluding the aborigines, is about 4000, of whom more than 2000 are Asiatics. The Northern Territory in 1910 was declared to be accepted as a Territory by the Commonwealth and to be under its authority. It was agreed that the Commonwealth should construct a transcontinental railway from Pine

Creek southwards to South Australia. From 1863 to 1910 the Northern Territory was incorporated with South Australia.

### Towns.

*Palmerston* is the capital. *Port Darwin*, one of the finest harbours in Australia, is the terminus of the transcontinental telegraph line and of the proposed railway to Adelaide. *Pine Creek*, 140 miles south of Palmerston, is the present terminus of the Port Darwin end of the transcontinental railway.

## Western Australia.

### Position and Extent.

Western Australia, the largest of the Australian States, includes that portion of the continent west of 129° E. longitude. Its area is 975,920 square miles, or about eight times the size of the British Isles.

### Surface.

The interior is stony or sandy, but there is good land in the west and in the north-east. The Darling Range is 300 miles long and has some peaks of 3000 feet. The south coast has an almost entire absence of rivers or streams, but along the west coast there are some, of which the Swan river is the chief. Few rivers run in the dry season. There are shallow salt lakes inland, but they are generally dry in the summer months. The coast is little indented by bays, gulfs, or river mouths, and as a consequence there are no natural harbours.

### Climate and Rainfall.

The climate is tropical in the north; the heat is extreme in the interior; and in the south and south-west the climate is temperate for the greater part of the year. Perth has a mean annual shade temperature

of  $64^{\circ}$ , a southerly wind prevailing from November to February, and a north-easterly for the mid-winter months. The average annual rainfall at Perth is rather over 33 inches, but in the interior there is an almost entire absence of rain.

### **Plants and Animals.**

The natural history is similar to that of the rest of Australia. Timber of excellent quality, mainly eucalyptus, abounds in the south-west, and there are many species of acacia. Wheat and other cereals do well in the south, and grapes and oranges are fine and abundant. Horses, cattle, and sheep are reared, and thousands of camels have been imported from India and South Australia. There are important pearl fisheries on the north-west coast, the chief centre being at Broome, on Roebuck Bay.

### **People and History.**

The history of Western Australia begins on 2 June, 1829, when there was a British settlement known as the Swan River Settlement. Responsible government was granted in 1890, so that Western Australia is the youngest of the States of the Commonwealth. The population in 1911 was 302,836, the greater part of whom were settled in the south-west.

### **Resources, Industries, Trade, and Communications.**

The discovery of gold in 1892-3 has led to the development of this State, which is now one of the world's greatest gold producers. It employs 17,000 miners, and the annual value of gold is upwards of £6,000,000. Coal is also found in the south-west, and there are other undeveloped mineral resources. Gold, timber, wool, and pearl-shells are among the chief exports, and the imports include provisions, clothing, and machinery. The construction of railways has

made rapid strides, there being 3425 miles open for traffic and many miles under construction. Western Australia is the most favourably situated of all the Australian States with regard to trade, as it is several days nearer the European markets than the eastern States. This gives it a great advantage in the shipment of fruit and other perishable goods.

### Towns.

*Perth*, the capital, is well situated on the Swan river a few miles from its mouth. *Fremantle* is the chief port of the State and has communication by road, rail, and canal with the capital. *Albany*, on King George Sound, is another important seaport. *Coolgardie* and *Kalgoorlie* are centres of rich gold-mining areas.

## New Zealand.

### Position and Extent.

The New Zealand archipelago consists of three chief islands, North Island, South Island, and Stewart Island, which extend from 34° to nearly 48° S. latitude. Besides these islands, the Dominion consists of several smaller islands some little distance from the principal group, the chief of which are the Kermadec Group, the Chatham Islands, and the Cook Islands. The three chief islands have a coast line of 4330 miles, and the area of the Dominion is 104,750 square miles, of which North Island covers 44,468 square miles and South Island 58,525 square miles. Separated from Australia by 1100 miles of ocean, New Zealand presents a striking contrast to that continent in physical features, climate, and natural history. Geographically considered, New Zealand is the Japan of the South Pacific, for it has a similar configuration, the same abundance of bays and harbours, and, like Japan, lies midway between the Tropics and the Pole.

## Surface and Coast.

The coasts are high and often very precipitous. The inlets are numerous, although the harbours are not well distributed. The eastern side of North Island is well provided with harbours, and Waitemata, the port of Auckland, is one of the best in the southern hemisphere. Cook Strait, 16 miles across, has some good harbours, especially that on which stands Wellington, the capital.



A peak and glacier in the Southern Alps, New Zealand.

Foveaux Strait, which separates South Island from Stewart Island, has The Bluff, the port of this district.

The surface of the islands is mountainous, and one long succession of mountains runs through both islands from the south-west to the north-east, and is only interrupted by Cook Strait. In South Island the best known chain is the Southern Alps ; they are lofty and contain Mount Cook (12,350 feet), the highest mountain in New Zealand. They have snow-fields and glaciers,

of which the great Tasman glacier, on the west, is the longest. The mountains in North Island are not so lofty and the highest peak of the main chain is 5606 feet. The highest mountains of North Island are found, however, in the Taupo volcanic area, where Ruapehu (9175 feet) is the chief peak and an active volcano. This Taupo volcanic district is remarkable for its hot springs, its geysers, and for the disastrous explosion in 1886 when the famous Pink and White Terraces were destroyed. In South Island there are considerable tracts of level country, and Canterbury Plains, more than 100 miles long, are the largest of these.

The perennial rivers are abundant, but, owing to their swiftness and liability to floods, they are of little use for navigation. The Waikata, flowing northward from Lake Taupo, is the longest river in New Zealand and is of commercial value. The lakes are famous for their beautiful scenery; Lake Taupo and Rotorua are on the volcanic plains in North Island, while the lakes of South Island lie in deep valleys and recall the Swiss lakes.

### **Climate and Rainfall.**

The climate is everywhere tempered by the sea-breezes, and, speaking broadly, New Zealand has no great extremes of heat or cold. The temperature, especially in summer, resembles that of England; the mean annual temperature of North Island is about  $56^{\circ}$  and of South Island  $52^{\circ}$ . The difference in the mean annual temperature of Auckland and Dunedin, 630 miles apart, is less than  $9^{\circ}$ . Owing to the position and configuration of the country, it is free from droughts and floods, dust storms and blizzards, and ordinary pursuits can be followed throughout the year. The climate is remarkably healthy and the death-rate of 10 per 1000 is the lowest in the world. The winds that carry the most plentiful rains blow from the north-west; hence the western slopes of the mountains

and the plains at their base have an abundance of rain, while the plains on the east have a more scanty rainfall. Auckland has an average yearly rainfall of 42 inches and Dunedin of 36 inches, but at places on the west coast of South Island the annual rainfall exceeds 100 inches.

### Plants and Animals.

The forests which cover so much of New Zealand are almost tropical in their luxuriance. There are dense masses of creepers, shrubs, ferns, and climbing plants, and these, together with the rich abundance of tall and graceful tree-ferns, impart to the forests some of the features of the forests in equatorial regions. The ferns, of which there are many varieties, often rise to a height of 50 feet, but the grandest object in the North Island forests is the Kauri pine, a magnificent tree, often as high as 150 feet with a circumference of 40 or 50 feet. Another characteristic plant is the New Zealand flax (*Phormium*), whose fibres are used for rope-making.

The native avifauna of New Zealand includes some of the most curious and interesting birds in existence, particularly the wingless birds, the kiwi, kakapo, and weka. In ancient times the country was the home of a great, ostrich-like bird, the moa; it was wingless and its fossil bones are found in various parts. Native birds are numerous and several sing very sweetly. Before colonisation, there were few mammals and reptiles, but all English domestic animals have since been introduced and have thriven.

### People and History.

The population of New Zealand is about 1,200,000, of whom 49,844 are Maoris. The white population is almost entirely of British origin—English, Scottish, and Irish, in order of numbers. There are a good many Chinese, but their immigration is discouraged by a poll-tax of £100. The aboriginal inhabitants of New

Zealand are the Maoris, a race of brown Polynesians. Most of them live on North Island, and many of them fought against British troops in the last Maori war in 1871; since then some have fought for the British in the Great War. The Maoris are a brave, able race, tenacious of its ancient traditions, and remarkably skilful in wood-carving.

Tasman was the first European to discover New Zealand in 1642, and the islands were not again visited till Captain Cook circumnavigated them in 1769 and subsequent years. Some trade sprang up in the 19th century, and the islands were annexed by Britain in 1840. Responsible government was conferred in 1852, and the colony was styled "The Dominion of New Zealand" in 1907. The Governor is appointed by the King and there are two Houses of Parliament. The seat of government is at Wellington. Elementary education is free, compulsory, and secular; there are good secondary and technical schools, and the University of New Zealand has several colleges affiliated to it. There is no state religion, but the religious bodies of most importance are the Church of England, Presbyterian, Wesleyan, and Roman Catholic.

### **Resources, Industries, and Trade.**

New Zealand has three essentials for a farming country—good soil, good climate, and a plentiful water supply; and as a result more than three-fourths of its total annual production comes from the soil in the form of wool, frozen meat, butter and cheese, hemp, and grain.

The chief industries are those connected with sheep-farming, dairy-farming, agriculture, and horticulture. It is, however, first to the wool flocks and the development of the mutton industry that New Zealand owes her wealth. Gold, silver, copper, iron, coal, and many other minerals are found in New Zealand, but hitherto the development of the gold and coal resources has been the chief concern. New Zealand possesses a

unique product which is often classed as a mineral but which is of vegetable origin, the fossil resin of the Kauri pine, known as Kauri gum. The gum-fields employ about 3000 persons in North Island, and the chief seat of the timber industry is in the Auckland district. The other industries are those connected with furniture-making, tanning, clothing, machinery, and printing.

The greater portion of the import trade is with Great Britain, and the chief exports in order of value are wool, frozen meat, butter, hides, hemp, cheese, and Kauri gum. Several lines of steamships are engaged in the passenger and cargo trade between New Zealand and Great Britain. The voyage direct from London to New Zealand via Capetown and Hobart takes 40 days ; the return voyage is made round Cape Horn via Rio de Janeiro or Montevideo. The railways are owned by the state and extend to 3012 miles, connecting all the chief towns.

## Towns.

The distribution of the population is largely responsible for the number of flourishing small towns both inland and on the coast. New Zealand is thus a contrast to Australia, where the bulk of the population is centred in a few large towns. The four cities of New Zealand are Auckland and Wellington in North Island, and Christchurch and Dunedin in South Island. *Auckland* has a magnificent position on the south of Waitemata Harbour. It is a busy seaport, and is particularly the centre of trade with the South Sea Islands. *Wellington*, on Port Nicholson, an inlet of Cook Strait, is the capital of New Zealand. *Christchurch* is the principal town on the Canterbury Plains. It owes much of its beauty to the River Avon, which flows through the heart of the city. *Dunedin*, the metropolis of Otago, is the chief port of the principal gold-field of New Zealand. Among the lesser towns may be mentioned *Nelson*, a particularly beautiful town

near the northern end of South Island; *Napier*, the seaport of Hawke's Bay; *New Plymouth*, with the snowy cone of Mount Egmont in the background; *Invercargill*, the chief town of Southland, with its seaport at The Bluff, 17 miles away; and *Greymouth* and *Westport*, on the west side of South Island, ports of the principal New Zealand coal-fields.

## The Pacific Islands.

Melanesia comprises the islands from New Guinea to New Caledonia. They rest upon the submarine plateau and are related to Australia both geologically and by the character of the fauna and flora. It would appear that these islands are the remains of continuous land that formerly united New Zealand with Australia and New Guinea.

*New Guinea* is the largest island after Australia, from which it is separated by the shallow Torres Strait, about 90 miles wide. It is a long island having an area of upwards of 300,000 square miles. Lofty ranges of mountains, rising to a height of over 13,000 feet, traverse it, and there are three large rivers, of which the Fly is the most important. The whole of New Guinea lies within the track of the south-east trade winds, followed by the north-west monsoons, and so there is a heavy rainfall. The soil is rich and the flora diversified with such tropical plants as the coco-nut, sago, banana, sugar-cane, and mango. There is an abundance of timber, and ebony, cedar, and sandal-wood are likely to be of great value. There is a wide range of minerals, and gold is produced in large quantities since its discovery in 1878. New Guinea belongs to Great Britain and Holland. The sovereignty of Britain was declared in 1888, and British New Guinea was placed under the authority of the Australian Commonwealth in 1901. In 1914 German New Guinea was transferred to Australia, and

the whole area of British New Guinea is now known as the Territory of Papua. The chief station of British New Guinea is at Port Moresby, and the exports are gold, pearl-shells, bêche-de-mer, and copra.

Of the other groups, the *Bismarck Archipelago* and the *Solomon Islands* were transferred to Australia in 1914; the *New Hebrides* are under the joint protection of Britain and France; and *New Caledonia*, 900 miles east of Queensland, belongs to the French, who use it as a convict settlement.

*Polynesia* is the name given to all the small islands of the Pacific, with the exception of those previously mentioned. The *Micronesian* section includes the small coral islands of the *Caroline* and *Marshall* groups, and further to the south-east the *Gilbert*, *Ellice*, *Fiji*, *Samoan*, and *Tonga*, or *Friendly*, Islands. The *Pelew* Islands and the *Ladrones* help to enclose the *China Sea*; in the *South Pacific* there are the *Low Archipelago*, the *Society Islands*, *Cook Islands*, and the *Marquesas Islands*; and in the *North Pacific* are *Hawaii*, or the *Sandwich Islands*, the largest archipelago of *Polynesia*. Almost all these islands are situated within the tropics and are either of volcanic or coral formation.

The *Fiji Islands* are the most important of the British possessions in *Polynesia*. They are mainly of volcanic formation, and *Viti Levu*, the largest of the islands, has more than half the land area of the group. The islands were ceded to Britain in 1874 and form a Crown Colony. The soil is fertile and produces sugar, coco-nut, maize, tobacco, coffee, and cotton. There is considerable trade, and the capital is *Suva*.

The *Society Islands* have a delightful climate. They belong to France. *Papeete*, the capital, is on the volcanic island of *Tahiti*.

*Hawaii*, formerly known as the *Sandwich Islands*, belongs to the United States. *Hawaii* is the chief island, which contains the famous volcanoes *Kilauea* and *Mauna Loa*, over 13,000 feet high. The capital is *Honolulu*, on the island of *Oaku*, and regular lines of

steamers visit this port from San Francisco, Vancouver, Yokohama, Sydney, and Auckland.

The *Samoan* or *Navigator Islands* are in the direct line of steamers from Australia or New Zealand to the western ports of North America via Hawaii. The islands belong to New Zealand and the United States. Apia, the British capital, is on Upolu; and Pago-pago, on Tutuila, which belongs to the United States, has the best harbour.

Under the Treaty of Versailles, Japan was appointed mandatory to the former German possessions north of the equator. These include the Caroline, Pelew, Ladrone and Marshall Islands.

Besides the islands already mentioned, there is *Easter Island*, the remotest island of Polynesia, famous for its gigantic statues cut out of lava. The *Galapagos Islands* are a volcanic group off the coast of Ecuador. The *Juan Fernandez Islands* belong to Chile, from which they are distant more than 400 miles. *Pitcairn Island*, east of the Low Archipelago, is famous in connexion with the mutineers of the "Bounty," who settled here in 1789.

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## CHAPTER XI

### NORTH AMERICA.

#### Position and Size.

North America, the northern and larger portion of the New World, is joined to South America by the narrow Isthmus of Panama. Of the whole area of the New World, North America occupies more than 9,000,000 square miles. A portion of the broad northern end is within the Arctic Circle, whilst the continent tapers to the south through the Tropic of Cancer. The greater part of North America thus lies within the temperate zone, while the greater portion of South America is within the tropics. These two great continents, while differing much in climate and productions, are alike in several respects. Both are triangular in shape, with a narrow prolongation to the south. Each has a long and high range of volcanic mountains extending from north to south along the west coast; a broad central plain; and a comparatively low eastern range of mountains. It may also be noted that the rivers of the two continents have some features in common, especially in regard to their direction. The northern portion of North America is so wide that Alaska is separated by a distance of less than 50 miles from Asia, while Labrador is more than 2000 miles from Europe.

#### Surface and General Features.

North America may be compared with Asia in the character and magnitude of its physical features, for

it is a continent of mighty mountain chains, of wide and long rivers, of immense plains, and of many large fresh-water lakes. The chief features of North America may be considered under three divisions.

*First*, there is the western mountain system, which comprises a number of minor ranges, usually with a north and south direction. This broad area of mountainous land extends the whole length of the continent and is 1000 miles wide in the United States. The eastern portion of this system is known as the Rocky Mountains, and the western portion comprises the Sierra Nevada and the Coast Ranges. The Rocky Mountains form a lofty chain with peaks over 14,000 feet high. The western system is known as the Sierra Nevada in California, as the Cascade Range in the north of the United States, and as the Coast Ranges in Nevada. The rivers flowing down the western slope have cut deep cañons, of which the Yosemite Valley is the best known. The highest peak of the Sierra Nevada is Mount Whitney, 14,522 feet high, and the Cascade Range to the north has peaks almost as high. The Coast Ranges in the United States are not so high; but in Alaska Mount St Elias and Mount McKinley, over 20,000 feet high, are the highest summits in North America. Between the Rocky Mountains and the Sierra Nevada is an elevated plateau, the Great Basin. It is an arid region with many salt lakes, of which the Great Salt Lake in Utah is the best known. These lakes are evidently the remains of an inland sea which once sent its waters to the Pacific.

*Secondly*, the Great Plains, extending from the shores of the Arctic Ocean to the Gulf of Mexico, are marked features in the physiography of the continent. They are known by various names, but the Prairies are the most distinctive feature of North America. Extending from Mexico to the Great Lakes over an area of 500,000 square miles, they are wide, open, treeless plains, yielding an abundance of wheat.

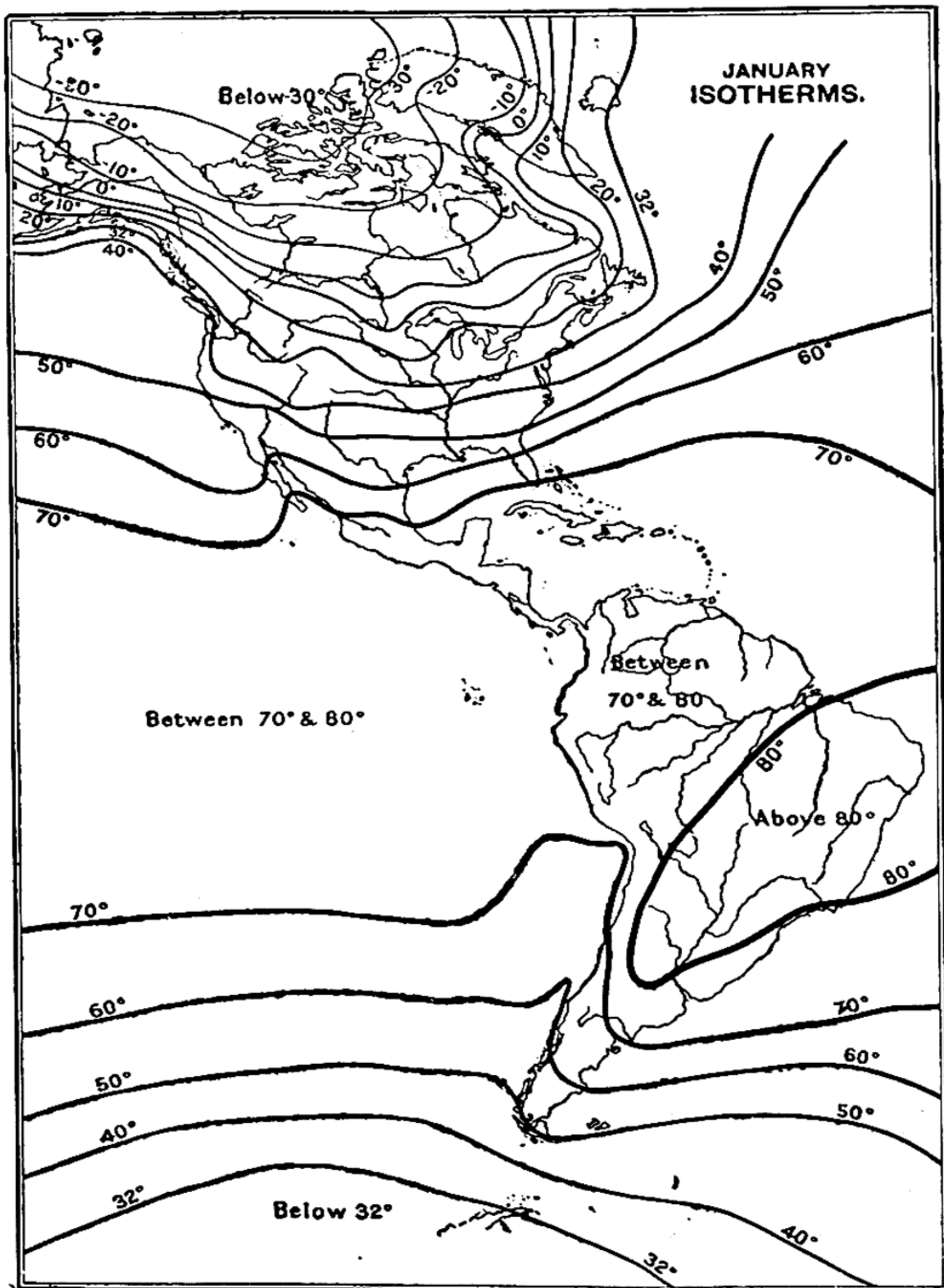
*Thirdly*, the eastern, or the Appalachian, mountain-

system extends from Labrador to Alabama, and Greenland may be considered a portion of it. These Eastern Mountains are the remains of land that once extended into the Atlantic, and the main mass consists of parallel ranges running from north-east to south-west. The Appalachian Mountains give their name to the system, but the other ranges are known as the Alleghany Range and the Adirondacks. The highest peak in the south is Mount Washington (6293 feet), and in Labrador some of the peaks are over 8000 feet in height. Between the Eastern Mountains and the Atlantic coast extends a low plain, composed of marine sediment, and not more than 200 or 300 feet high.

### Rivers and Lakes.

The chief rivers of North America run in a northerly direction to the Arctic Ocean, in an easterly direction to the Atlantic, or in a southerly direction to the Gulf of Mexico. The rivers of the northern slope lose much of their commercial value from the fact that their waters are frozen for much of the year. The Yukon and Mackenzie, rising in the Rocky Mountains, flow into the Arctic Ocean; the many rivers which form the Nelson empty into Hudson Bay; and the Fraser, Columbia, and Colorado, remarkable for their cañons, discharge into the Pacific Ocean. The St Lawrence, the great river of Canada, flows through the five great lakes, but its estuary is ice-bound for a part of the year. The Mississippi, with its longest tributary, the Missouri, drains the southern portion of the great plain and is navigable for a distance of 4000 miles. The Atlantic slope of the United States is well supplied with navigable rivers, of which the Hudson and the Potomac are the best known. Among the other rivers flowing into the Gulf of Mexico the Rio Grande del Norte and the Colorado of Texas may be mentioned.

From the Rocky Mountains to Hudson Bay there is a series of great lakes, extending from Great Bear

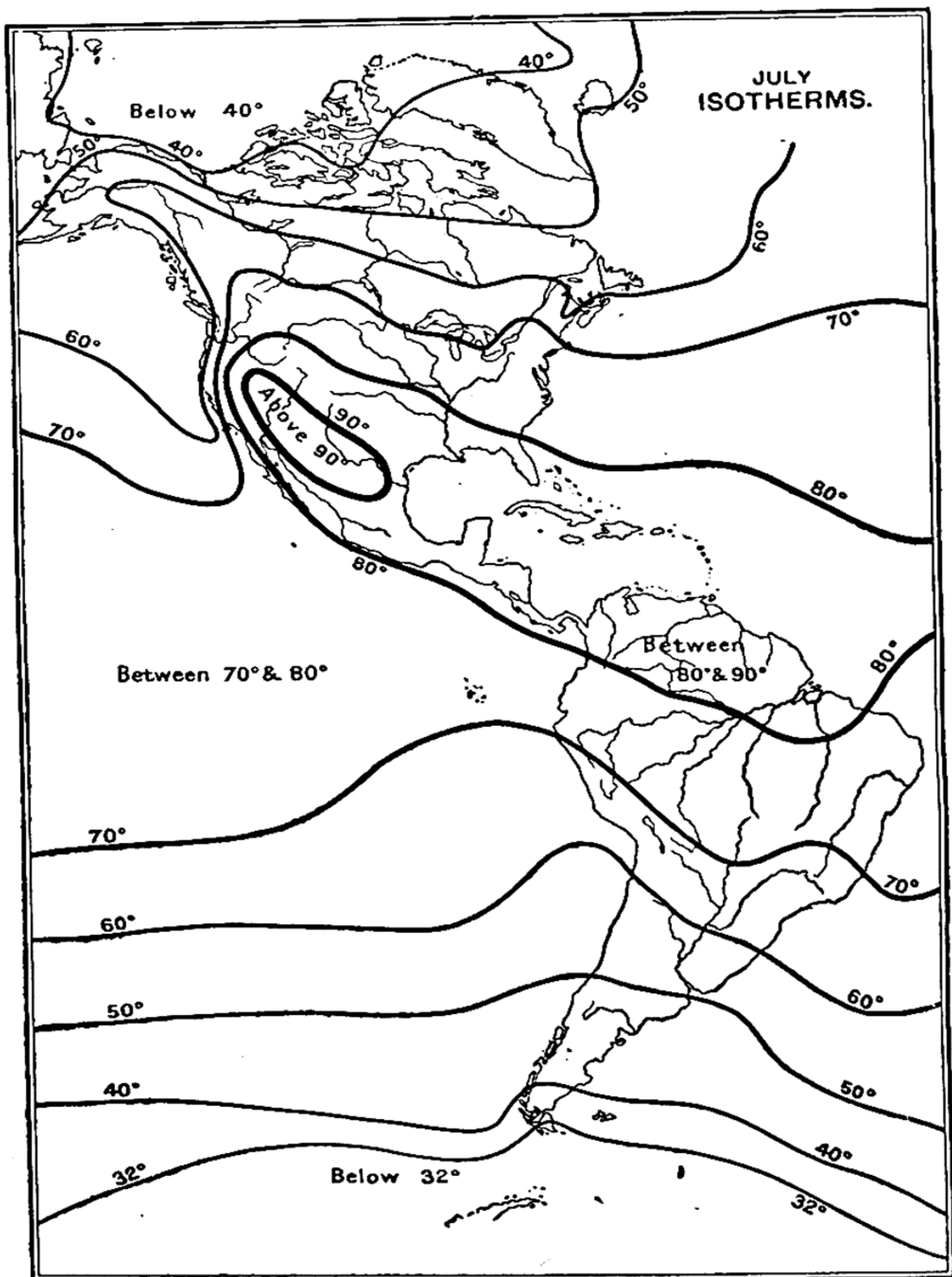


Lake to Lake Superior, the largest fresh-water lake in the world and the first of the succession of lakes in the course of the River St Lawrence. As already mentioned, there are many salt lakes in the Great Basin of the United States, while in the Cascade Mountains are some volcanic lakes, of which Crater Lake in Oregon is the most famous.

### Coast.

The western coast-line is generally high and rocky. British Columbia and Alaska have some good seaports, the coast-line being cut in many places with high-walled fjords or sheltered by ranges of high and well-wooded islands. The eastern coast to the north of New York is generally rocky and sheltered with islands, and there are many good harbours. South of New York, the coast is almost entirely low and sandy. Some of the best ports are formed by river-mouths which have sand-bars across their entrances. The long extent of low and sandy coast on the Atlantic and Gulf coasts of the United States is quite unique. The Arctic coast is ice-bound for part of the year, and the passage through Hudson Strait to Hudson Bay is possible only during the brief summer. Bering Strait, separating America from Asia, is only 36 miles wide. It will be seen that the coast of North America is long and irregular. The land projects into the sea in long and narrow peninsulas like California and Florida, or such wide ones as Labrador. The sea has covered parts of the Great Plains and formed the Gulf of Mexico and Hudson Bay, or has flowed into valleys such as the Gulf of California and the estuary of the St Lawrence. The chief group of islands, formed by the arms of the sea joining inland, are the Arctic Archipelago and Greenland, Newfoundland, the West Indies, and the islands that fringe the Pacific coast of Canada.

*Greenland* is a great barren waste of ice and snow. The Eskimos, under Danish rule, have a few settlements on the west coast, but throughout its area of half a



million square miles there is no living thing to be seen. This waste of ice was crossed in recent years by Nansen and Peary, and in parts the elevation is over 10,000 feet. In the higher portions the temperature is always below zero and rain never falls. Upernavik, within the Arctic Circle ( $72^{\circ} 46' \text{ N.}$ ), is the most northerly settlement in the world.

### Climate and Rainfall.

The climate of North America depends on the influence of the ocean currents, on the sun's heat, and on the various arrangements of the land forms. The most important ocean currents flow along the Atlantic and Pacific coasts. The drift of water across the Atlantic by the trade-winds causes the water to rise within the West Indian Seas, and the overflow from this accumulation pours northward along the eastern coast of North America as a warm current, known as the Gulf Stream. When the Gulf Stream ends near Newfoundland it meets with cold currents from the north, and the result is seen in the dense fogs that prevail in that region. The north-west of the continent is warmed by the Pacific current. The general effect of ocean currents is to give a higher temperature to the eastern coasts of the United States and Nova Scotia, while the Canadian coasts are chilled by Polar currents. The chief feature in the distribution of temperature is a steady increase from north to south, ranging from  $30^{\circ}$  below freezing-point in Baffin Land to a mean annual temperature of  $80^{\circ}$  in Mexico. Owing to the influences of the ocean currents, it will be noticed that there is a marked difference between places on the east and west coast having the same latitude; and owing to the vast size of the continent, the inland regions suffer a marked difference between winter and summer temperatures. On the whole, the American winter is much more severe than that of Europe, and New York is colder than the Orkneys, which lie  $20^{\circ}$  further north. Variations of

temperature are more extreme and sudden than in South America or western Europe.

The air over the centre of the continent has a relatively high pressure, and the winds tend to pass outwards from land to sea. As a result, the winter, especially in the western interior, is a dry season. In the summer, however, an area of low pressure prevails in the central region and winds from the sea are more common. The winds blowing eastward from the Pacific are laden with moisture, which falls as rain on the mountains in the west, and reach the Great Basin as dry winds. Being forced to rise over the Rocky Mountains, they become further chilled, and losing the rest of their moisture, they sweep over the great plains as dry winds. The winds blowing northward from the Gulf of Mexico carry rain to the Mississippi valley, and the rainfall increases eastward to the Atlantic coast. The rainfall on the Pacific coast is as high as 60 inches per year; in the Great Basin it falls to 10 inches, and on the Atlantic coast it rises to 40 inches or more. A reference to a rainfall map of North America will show that the wettest parts of the continent are along the Pacific coast in Alaska and the south-east Atlantic coast.

### **Plants and Animals.**

Temperature and rainfall are two of the chief factors that determine the vegetation of North America. In the far north it is too cold for vegetation; south of this lies a belt of coniferous forest. The forest lands of America are of great importance, and the lumber trade, one of the great industries, is practised in the backwoods of the Appalachian range and in the lake provinces of Canada. A vast extent of the interior is arid, for it is shut off by the mountains from the moist winds of the Pacific, and west of  $100^{\circ}$  W. long. trees are wanting over a great space of broad plains. The mountain slopes are covered with forests, and the Cascade Range has trees of great size. The northern

limit of cultivated land is approximately the 65° July isotherm. In the eastern half of this area wheat is the chief crop in the north, maize in the centre, and cotton, tobacco, rice, and the sugar-cane in the south.

The wild animals of North America are of little value from an economic point of view. Fur animals, such as the beaver, sable, and ermine, are common in the northern forests. The musk ox is found in the far north and the grizzly bear in the western mountains. The bison, the most interesting of all the wild animals of America, used to range the broad plains in countless herds, but is now sadly reduced in numbers. The moose and the American elk live in the Canadian forests, and European reindeer have been introduced with some success into Alaska and Labrador. In the tropical regions animal life is varied and abundant. The tapir, monkey, and jaguar are found; parrots and humming birds abound; and alligators, in the warm waters of the south, and rattlesnakes are common.

### **Minerals.**

North America is rich in mineral treasures. Coal, iron, copper, gold, silver, lead, and petroleum are abundant, besides salt and other valuable products. The coal-fields in Canada and the United States are enormous in extent. There is a considerable production of petroleum in the United States, and natural gas occurs abundantly in Pennsylvania and elsewhere. Gold is chiefly produced among the mountains in the west. The yield in British Columbia and California is not so great as formerly. The Klondyke district has attracted much attention in recent years owing to the discovery of gold, but its working is hindered by the Arctic climate.

### **People, Distribution of Population, Language, Religion, and Internal Communication.**

The native people who inhabited America when it was discovered by Columbus were called Indians,

because the discoverer mistook the West Indies for part of India. These aborigines entered America from Asia and may be regarded as Mongolians. The number of the native population was never large, but of late years it has decreased and does not now exceed 270,000. The Indians are found in the remotest parts of Canada, in reservations in the United States, in Mexico, and elsewhere. It is generally considered that the Eskimos of the far north are also of Mongolian origin.

The overwhelming proportion of the American people entered the New World from Europe. Although America was discovered in the eleventh century by the Norsemen, its real settlement by Europeans dates from the voyage of Columbus to the West Indies in 1492. The Spaniards subsequently settled on the south-east coast and on the west at San Francisco. French settlers followed and founded a station on the site of the present Quebec in 1608, besides forming settlements in Nova Scotia and Newfoundland. The Dutch founded New York, which they called New Amsterdam, in 1623 ; but they had been anticipated by the Pilgrim Fathers in New England in 1620, and later on the English secured possession of New York. After the conquest of Canada in 1759, the British held all the eastern coast from Florida to Nova Scotia; and although Britain lost the United States in 1782, the continent, with the exception of Mexico, Central America, and a few small islands, belongs to Britain and the United States. The bulk of the population is of British origin, but there is a steady stream of immigrants from Europe. Chinese have also entered, especially on the west coast, but their presence is no longer viewed with favour. Besides the natives and the European people, there is a large population, perhaps 19,000,000, of negroes, more especially in the United States. The Spaniards first introduced the negroes from Africa to work as slaves, and so the negro element is found chiefly in the southern states, where the climate is congenial to them and where work on sugar rice, cotton, and tobacco plantations

is abundant. The total population of North America is estimated at 120,000,000, of whom the larger portion are in the United States. Canada is gradually developing and offers every inducement for a large population.

The Spanish language is spoken in Central America, Mexico, and Cuba ; French prevails in eastern Canada, especially in Quebec : but by far the largest portion of the American population are English in language and British in descent. As a rule, the people of French



An Eskimo encampment.

and Spanish descent belong to the Roman Catholic church, while those of British descent are mainly Protestants. The Eskimo and most of the Indians are heathens.

North America is under the control of several nations. The Dominion of Canada, Newfoundland, and Labrador belong to Britain, as also do some of the West Indies and Honduras. The United States include Alaska, Porto Rico, and some of the Pacific Islands, and it has

also the protection of Cuba. Greenland is a Danish colony, and Mexico and the states of Central America are independent states.

The chief means of internal communication are by waterways and railways. Several fine rivers penetrate the interior, and great trunk railways unite the Atlantic and Pacific coasts. Steamships and cables connect America with Europe across the Atlantic, and of late years a large and increasing trade has developed on the western side, owing to the rapid ocean transit between the Pacific ports of America and those of Australia, Japan, and China. Japan can now be reached more quickly by the western than by the eastern route from England.

## Canada.

### Position and Size.

The Dominion of Canada is a confederation of provinces situated to the north of the United States, from which it is separated by the median line of Lakes Superior, Huron, Erie, and Ontario, and by the parallel of  $49^{\circ}$  N. The southern frontier is over 3000 miles long. The area is about 3,729,000 square miles, or nearly that of the entire continent of Europe.

### Surface and General Features.

The surface of southern Canada is similar to that of the northern portion of the United States. Lakes, falls, and rapids abound, and the effects of the glaciers which once spread over large areas of the continent are specially apparent in the south-east of Canada. In the middle of Canada lies Hudson Bay, around which are fertile plains. This district is known as the Laurentian plateau, and nowhere have the streams cut deep valleys through the rocky surface of bare-topped hills and lowlands with a clayey soil. The eastern side of

Canada forms the northern extremity of the Appalachian system and the narrower coastal slope is towards the Gulf of St Lawrence. The western part of Canada is the most mountainous and comprises the Rocky Mountains, mostly of limestone, and the Cascade Range, mainly of granite rocks. The highest peak in the Western Cordilleras is Mount Logan, which is 19,500 feet high. The scenery of the western region is really beautiful, and the railway runs among the mountains and climbs to the passes amid cañons, glaciers, and snow-clad peaks. From the south-west of the Laurentian plateau, the plains or prairies extend to the Rocky Mountains, and between the plateau and the Appalachian Mountains is the fertile plain of the Great Lakes and the St Lawrence valley, which, at present, contains the greater part of the Canadian population.

### Rivers and Lakes.

Canada is well watered and the map shows a network of rivers and lakes. The rivers and lakes may be considered in four divisions. *First*, the Atlantic rivers, of which the St Lawrence is by far the most important. It rises in the interior of Canada and has a course of more than 2000 miles, flowing through a chain of the largest fresh-water lakes in the world and emptying itself by a wide estuary into the Atlantic Ocean. Its drainage basin is estimated at half a million square miles, and one third of this is covered by Lakes Superior, Michigan, Huron, Erie, and Ontario. Lake Michigan is entirely in the United States. Among the tributaries of this natural highway for Canadian trade are the Ottawa, Saguenay, Richelieu, and Niagara, the last of which forms in its course the famous Falls of Niagara, over 160 feet in height. There are numerous rapids in the course of the St Lawrence, but large ship-canals have been built, so that all but the largest steamers can pass from the Atlantic to Lake Superior, a distance of 2400 miles.

*Secondly*, there are the rivers and lakes in the Hudson Bay basin. This is the largest drainage area in Canada, and includes the Nelson, Saskatchewan, and Churchill rivers, and Lakes Winnipeg, Winnipegosis, Manitoba, and Lake of the Woods.

*Thirdly*, the Arctic drainage area includes the Mackenzie, the principal river (with its important tributaries, some of which rise in the Rocky Mountains), the Coppermine, and the Great Fish River. The Mackenzie also includes in its course the large lakes known as Athabasca, Great Slave, and Great Bear.

*Fourthly*, the Pacific drainage area has several rapid rivers, among which the Fraser is the most important. The Yukon, which flows through Alaska to the ocean, has more than 600 miles of its course in Canada.

## Coast.

The most marked physical feature is Hudson Bay, which extends for more than 1000 miles and divides Canada into two great parts. Its average depth is only about 60 fathoms, and it is a local depression of the surrounding plateau. It is connected with the Atlantic by Hudson Strait; its water, except in James Bay, is clear and salt, but on account of the shallowness it has no harbour suitable for large ocean vessels. The eastern coast extends from the St Croix river northwards to Cape Chidley, and the Gulf of St Lawrence is its most conspicuous feature, for it forms a sea, almost land-locked by Newfoundland and Cape Breton. It has also the islands of Prince Edward and Anticosti, while the northern entrance is by the Strait of Belle Isle. The Pacific coast-line begins at the Strait of Juan de Fuca and runs for a distance of 530 miles to Alaska. The coast scenery is very fine on the west, where there are winding fjords and many islands. Along the northern coast-line is the immense Arctic Archipelago, the various islands being separated by shallow water. These islands are of some interest

from the fact that a north-west passage to eastern Asia was sought for centuries among the many channels that separate them. This passage was at last found by Maclure in 1850-53, but the route is of no use from a commercial point of view. These cold and barren islands have few inhabitants, but scattered groups of Eskimos are found along the coast.

### Climate and Rainfall.

Canada has broadly a climate of extremes, modified by local circumstances, the most powerful being the sea, which on the east coast tempers the winter and on the west coast softens away that season. In the middle, snow is general throughout the winter; but when the long frost breaks up, spring comes with wonderful rapidity, and is followed in the south by so hot a summer that maize, melons, grapes, and peaches ripen in the open air. Winter is the characteristic season of Canada, for then the people lay themselves out to enjoy the sports that may be followed on the hardened surface both of land and water. Although the winters are intensely cold, they are not unhealthy, owing to the still, dry air, which makes the climate agreeable and invigorating to the strong. With the exception of the southern part of the Pacific coast, the average January temperature is below  $32^{\circ}$  F. for the whole Dominion, and in the extreme north more than 32 degrees of frost is the rule. It may be broadly stated that the eastern portion of Canada has a great range of temperature and a good rainfall; the inland regions have very extreme ranges of temperature and only moderate rainfall; and the Pacific region has an oceanic climate, with little range of temperature, and great rainfall. The following figures showing the range between mean summer and winter temperature should be considered: St John N.B.  $39.21^{\circ}$ . Winnipeg  $58.2^{\circ}$ , Victoria B.C.  $16.0^{\circ}$ . Compare these ranges with that for the British Isles, which is about  $20^{\circ}$ .

## Forests, Plants, and Animals.

From the Atlantic to the Pacific there extends a forest tract from two to three hundred miles wide and estimated to cover one million square miles. The northern limit of this forest tract is controlled by the summer isotherm of  $50^{\circ}$  F., and within its limits pine, spruce, larch, and other trees are abundant, and lumbering is the great industry in almost every province. North of the summer isotherm of  $50^{\circ}$  F. extend the barren lands or the region of tundra. Agriculture is practised on an extensive scale in Canada, and the climate is especially suited for the growth of cereals. In the eastern provinces oats and barley are freely grown, as well as some wheat; but Manitoba and Saskatchewan are especially favourable to wheat culture owing to the hot, dry summer. Quebec grows maize and tobacco as well as cereals, and Ontario is largely devoted to orchards and fruit culture. British Columbia has an admirable climate for growing fruit, and Nova Scotia is noted for its delicious apples.

The musk ox is one of the most interesting animals in the north, and the caribou roam in great herds over the plains. The moose and the American elk are found in the south, but the bison, once so numerous, is now practically extinct. The fur-bearing animals are numerous, and in the sub-Arctic regions the beaver, bear, marten, otter, mink, lynx, skunk, and wolverine find their home. The rivers and seas are well stocked with fish, and it was the excellent fishing off the eastern coast of Canada that first drew the French to America. Cod, herring, lobsters, and halibut are obtained from the Atlantic, while salmon are caught in vast numbers in the Canadian rivers. Seals are found on the east side of Canada; their real value is not so much for the fur as for the blubber, which is useful in the manufacture of oil. The seals caught on the western coast are of great value because of their soft fur. The Canadian fisheries are the largest in the world, and there are

numerous fish-breeding establishments in various parts of the Dominion.

### **Minerals.**

Gold is mined in British Columbia and in the famous Klondyke region near the Alaskan boundary. It is also found in Ontario, Nova Scotia, and Quebec. Silver mines are being worked in Ontario, and iron ore is found all over the Dominion. Owing to the scarcity of coal in the vicinity, Canada has not produced much iron. The coal-beds of the west are rich, but too far from the eastern cities, while those in the east have not been developed. Nova Scotia has extensive beds of bituminous coal, but the freezing of the St Lawrence in winter is a great disadvantage to these mines. Copper has been mined in Quebec and Ontario, and there are in parts very extensive petroleum fields. The most valuable metals in order of importance are gold, copper, silver, nickel, and lead.

### **People, Distribution of Population, Language, Religion, and Education.**

The natives of Canada were called Indians by the European discoverers, and their descendants scattered throughout the Dominion now number about 105,000 out of a total population of over 7,200,000. The Indians are divided into many tribes, all of whom are skilful hunters and trappers. The Iroquois were the ablest of all the Indians, and are now found in Ontario and Quebec. The Sioux live in the interior plains of the west; and there are representatives of the Crees, Ojibways, and other tribes. The Eskimo inhabit the northern coast, living chiefly on marine animals.

The white population, which is yearly increased by many thousands of immigrants, is most dense in the provinces of Ontario and Quebec; but each year there is a considerable increase in the population of the western provinces. The settlers in Canada are mainly.

from the British Isles, United States, and France. A tax of 500 dollars is levied on all Chinese immigrants.

When the British were founding the colonies on the seaboard of the United States, the French were making settlements in the valley of the St Lawrence, and at the present time four out of every five persons in Quebec speak French and preserve the Roman Catholic form of religion.

There is no state church in Canada, but after the Roman Catholics, the following are the strongest denominations—Presbyterians, Anglicans, Methodists, and Baptists.

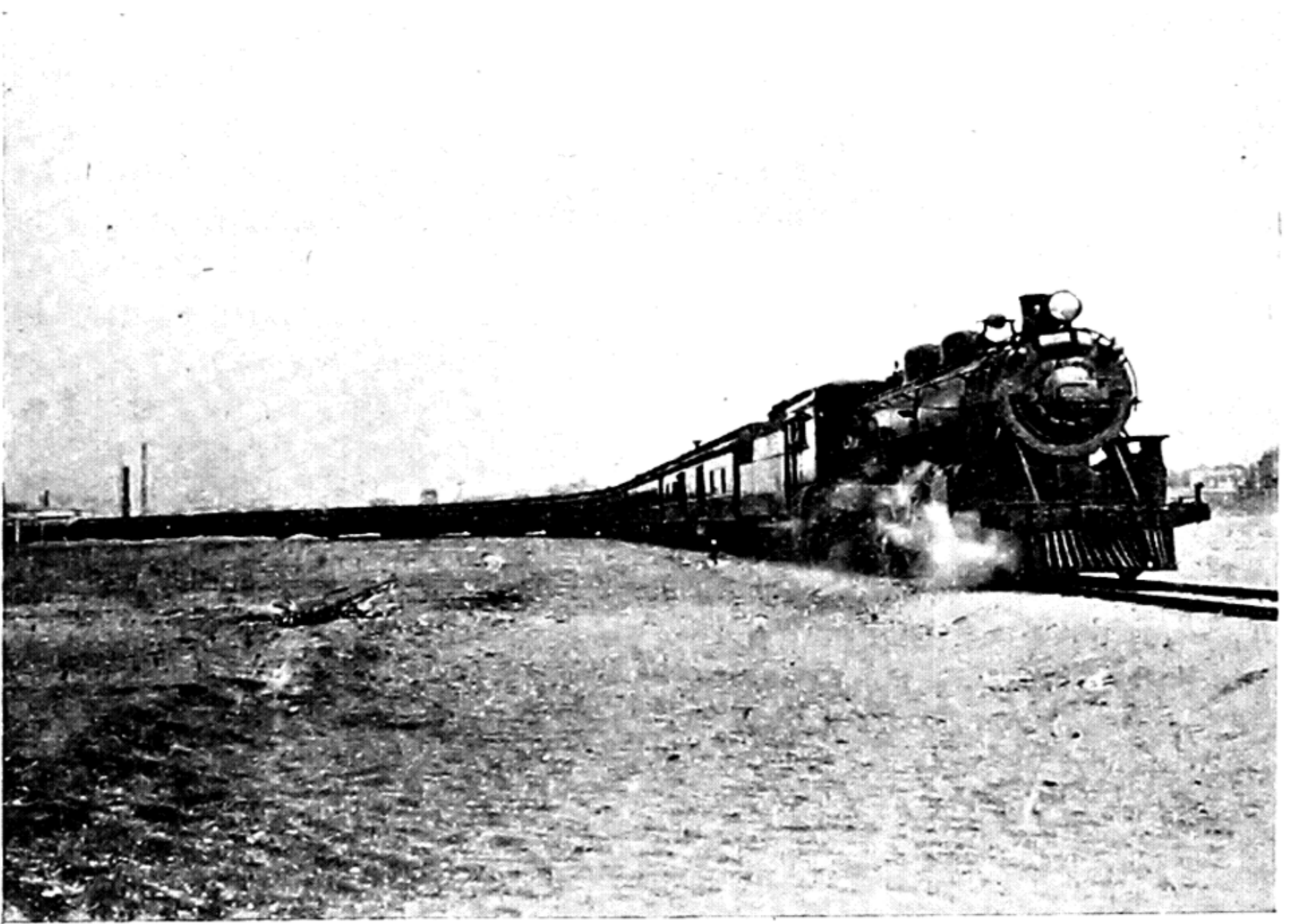
There is a system of free and compulsory education under the control of the provincial governments. In Ontario, Quebec, Alberta, and Saskatchewan there are separate schools for Roman Catholics, while in the other provinces the schools are unsectarian. There are 22 universities and many good colleges.

### **Industries, Commerce, and Communications.**

Agriculture, forestry, fishing, and mining are the great industries of Canada. The chief manufactures are those connected with the preparation of the raw materials for export, and among the most important of these processes are flour-milling, saw-milling, the manufacture of wood-pulp, the making of boots and shoes, cotton and woollen goods, and agricultural implements. Manufactures are protected by a high tariff on imported goods, but there is a preferential tariff in favour of Britain and the British colonies.

More than half the revenue of Canada is from customs duties. The chief exports are timber, cheese, bacon, live-stock and meat, wheat and flour, paper, and fish. The trade is chiefly with the United States and Great Britain, and the principal imports are iron, steel, manufactured goods of all kinds, woollen and cotton goods, coal and coke, sugar, tea, and other colonial products. Canada does a large shipping trade and several lines of steamers run weekly from Liverpool

or Glasgow to Montreal. The St Lawrence has been dredged so that ocean steamers can now reach Montreal, 160 miles above Quebec. To avoid the rapids of the St Lawrence, there is a system of ship-canals through which vessels pass to the great lakes. The Welland Canal goes round Niagara Falls and connects Lake Ontario and Lake Erie; and the canals of the Saulte Ste Marie give access to Lake Superior.



A Montreal-Vancouver train.

There are over 38,000 miles of railway, which is rapidly extending to the west and north. The *Grand Trunk* is partly in the United States, the lines radiating from Montreal to Portland in Maine and to Chicago. The *Canadian Pacific* crosses the entire continent from Montreal to Vancouver, a distance of 2930 miles, which is covered in 4 days 12 hours. It has opened up immense areas of new land for settlement, and, in

connexion with lines of Pacific steamers, it forms the shortest route from Europe to Japan, China, and New Zealand. The *Grand Trunk Pacific Railway* is 3600 miles long. It starts at Moncton, New Brunswick, and ends at Prince Rupert on the Pacific coast.

### Administration.

The original provinces were Upper and Lower Canada, Nova Scotia, and New Brunswick. In 1867 they were united as the Dominion of Canada, under the government of a Governor-general and two Houses of Parliament. Ottawa is the seat of government. There are now nine provinces, which have each a separate Lieutenant-Governor, parliament, and administration, and two territories, the North-west Territories and Yukon, are governed by a Commissioner and a council.

### Divisions and Towns.

(1) **Nova Scotia** includes both the peninsula of that name and Cape Breton Island. It was discovered by Cabot in 1498 and became a British colony in 1713, after having been in the hands of the French from 1605, when it was known as Acadia. It produces coal, iron, and gold; the fisheries are the chief source of wealth; and the apple orchards in the valley of Annapolis are noted. *Halifax*, the capital, on a fine natural harbour, open and free of ice all the year, does a large foreign trade. It is an important coaling-station for the British fleet.

(2) **Prince Edward Island**, the smallest of the Canadian provinces, but the most densely peopled, is distant only 9 or 10 miles from New Brunswick. The capital is *Charlottetown*, on a deep and well sheltered harbour.

(3) **New Brunswick**, very rich in forests, has also valuable fisheries. *Fredericton*, a small town, is the capital, but *St John* is the largest town and chief seaport on the Bay of Fundy.

(4) Quebec has a population mainly of French origin and speaking French. Its discovery by Jacques Cartier dates from 1534, but it fell into British hands in 1759. The capital is *Quebec*, founded by Champlain in 1608; but the largest city and principal seaport of Canada is *Montreal*, on an island at the junction of the Ottawa and St Lawrence rivers. It is the seat of commerce in the Dominion, a great railway centre, and has important manufactures.

(5) Ontario was first settled in 1776 and became a province in 1791. It has the greatest nickel mines in the world at *Sudbury*, and there are also important copper, silver, and gold mines, and much petroleum. Agriculture is the chief industry of the province. *Ottawa*, the capital of the Dominion, is the centre of the Canadian lumber trade. *Toronto*, on Lake Ontario, is the political and commercial capital of the province, for it is a great railway, industrial, and banking centre.

(6) Manitoba, in the heart of the continent, is a prairie country rapidly becoming occupied by rich wheat-fields of vast extent. *Winnipeg*, the capital, is in the centre of the richest wheat-growing region in the world and is an important railway centre on the Canadian Pacific.

(7) Saskatchewan is chiefly a wheat-growing province. The capital, *Regina*, suffered from a destructive cyclone in June, 1912.

(8) Alberta, an agricultural province, has coal mines near *Edmonton*, the capital. *Calgary* is the centre of the ranching district.

(9) British Columbia, the richest mineral province in the Dominion, was brought into notice by the discovery of gold in 1857. Vancouver Island was joined to it in 1866, and the province entered the Dominion in 1871. The forests are among the grandest in the world, and the fisheries, especially salmon, are important. *Victoria* is the capital. *Vancouver* and *New Westminster* are the two western termini of the Canadian Pacific Railway.

(10) **Yukon.** This territory was constituted a separate political unit in 1898.

(11) **North-west Territories.** These Territories comprise the districts formerly known as Keewatin, Rupert's Land, and the North-western Territory. The scanty population of these vast areas consists mainly of Indian hunters.

## Newfoundland and Labrador.

This large island at the mouth of the Gulf of St Lawrence is separated from Labrador, the east coast of which is politically part of it, by the narrow strait of Belle Isle. The coast of 2000 miles is bold and rocky, and the small population, mostly fishermen settled on the coast, are chiefly engaged in fishing off-shore and on the Grand Banks to the south-east, and in fish-curing and the manufacture of cod liver oil. Iron and copper are found, but are little developed. There are fine pine forests and saw mills, and pulp and paper mills have been established. Newfoundland was discovered by John Cabot in 1497, and an English governor was appointed in 1582. The capital, *St John's*, was so named as it was first entered by John Cabot on St John's Day. It has a good harbour, is the centre of the fishing-trade, and is the nearest American port to Europe, being only 1675 miles from Cape Clear in Ireland.

Labrador, with an area of 120,000 square miles, is a dependency of Newfoundland.

## The Bermudas.

This colony, consisting of a group of 360 islands, of coral formation, is midway between Canada and the West Indies. The islands, noted for their pleasant climate and scenery, are a favourite winter resort for Americans. Onions, potatoes, and lily-bulbs are the chief exports. Arrowroot of the finest quality is grown

and manufactured. The islands were discovered by Bermudez in 1515, and from him they received their name. In 1609 they were named the Somers Islands, owing to the shipwreck of Sir George Somers. The islands have a governor and representative government. *Hamilton* is the capital. *Bermuda* is an important naval base on the North America and West India Station, with dockyard, etc.

## The United States of America.

### Position and Size.

The United States occupy the middle portion of the North American continent. Including the outlying district of Alaska, with an area of 590,884 square miles, this great Republic covers 3,574,000 square miles, which is nearly equal to the area of Europe. It is a remarkably compact country, and, excluding Alaska, it has Canada for its northern boundary and Mexico for its southern boundary, while it stretches from the Atlantic Ocean on the east to the Pacific on the west for a distance of over 2500 miles. Alaska was bought from Russia in 1867, and in recent years various foreign possessions have been obtained. Hawaii was annexed, the Philippines and Puerto Rico were taken from Spain, and Tutuila, one of the Samoan Islands, was taken under the protection of the United States in 1899.

### Surface and General Features.

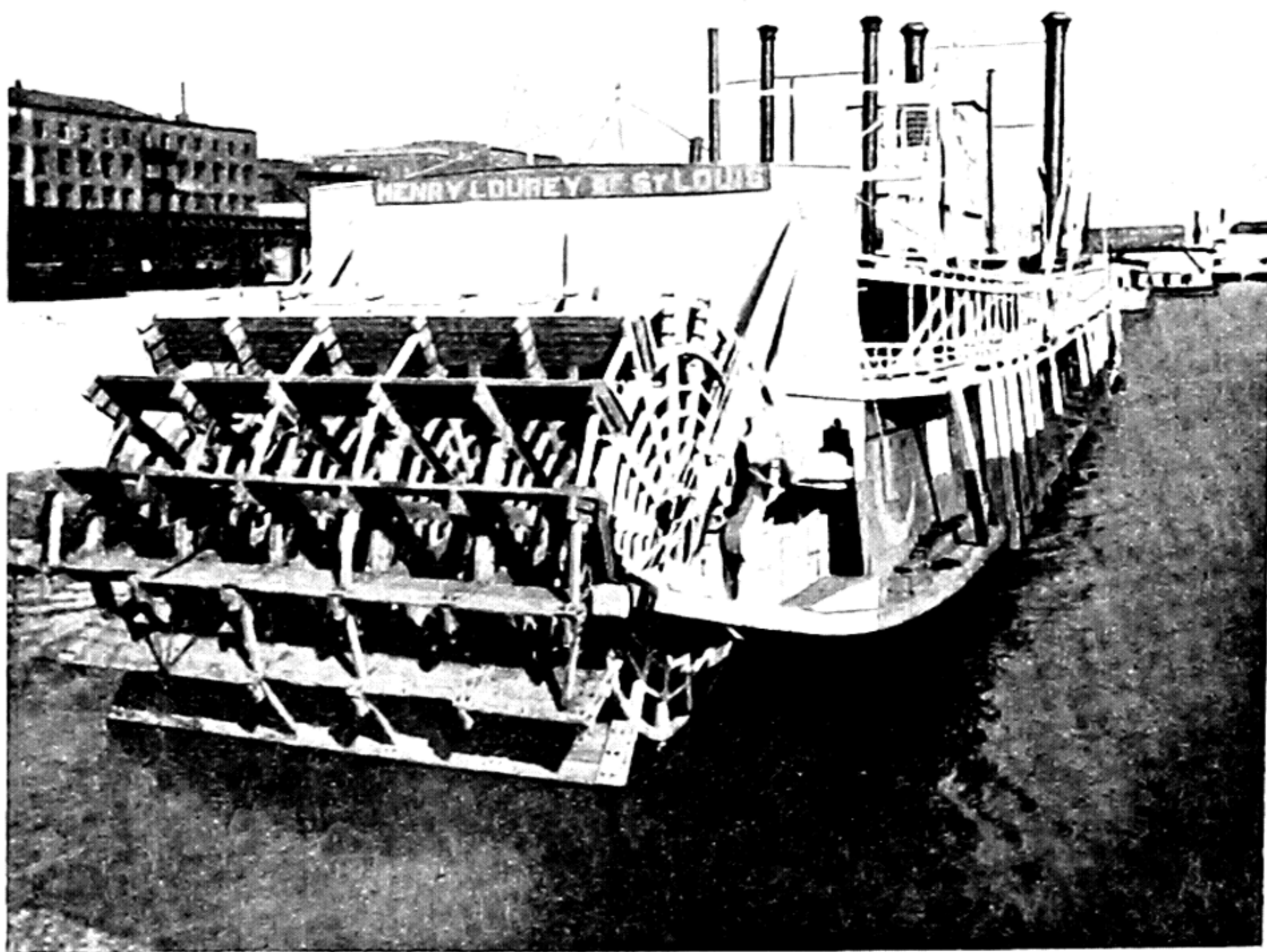
The Appalachian mountain system in the east and the western, or Pacific, mountain system form the framework of the physical structure of this great country, which is half a continent. The Alleghany, or Appalachian, Mountains, are narrow in Maine, but increase in width till they become 200 miles wide in North Carolina. The southern coast system seldom exceeds 100 feet in height, and the soil is sandy, with large swamps near the coast. To the east of the Alleghanies a coast plain

extends to the sea; and to the west, as far as the Pacific mountain system, is the great plain or central valley forming the southern part of the great continental depression which extends from the Arctic Ocean to the Gulf of Mexico. This great valley, occupying one-half of the whole country, is almost an absolute plain, and the Ozark Mountains, in Missouri, rising from 500 to 2000 feet, are the only elevations of any importance. The western, or Pacific, system of mountains consists of the Rocky Mountains in the east, and the Sierra Nevada, Cascade Mountains, and the coast ranges in the west. A district known as the Great Basin lies between the Rocky Mountains and the Sierra Nevada. Much of it is arid desert, with many salt lakes, of which Great Salt Lake is the most famous. Most of the peaks of the Sierras are of granite and metamorphic rock, and those of the Cascade range are volcanic. From 40° northward there extends a most remarkable group of extinct or faintly active volcanoes. The scenery of the western range is sublime, and Mount Whitney, in the Sierra Nevada, attains a height of 14,522 feet. In many places among the mountains there are fine views, deep cañons, boiling springs, and imposing waterfalls; but among all these interesting places the Yellowstone National Park, the Colorado Cañon, and the Yosemite Valley are of surpassing magnificence.

### Rivers and Lakes.

The drainage areas may be broadly classed as the Great Lakes and the St Lawrence, the Atlantic, and the Pacific. The waterway of the Great Lakes and the St Lawrence forms the natural outlet for the northern states. On the Atlantic slope the chief rivers are the Hudson, Delaware, Susquehanna, and Potomac, and of these the first is the most important, for it has New York, the greatest of all American seaports, at its mouth. The Hudson communicates at Albany by the Champlain Canal with Lake Champlain, and by

the Erie Canal with the Great Lakes. The vast river systems of the Mississippi and Missouri, with their tributaries the Ohio and Arkansas, drain two-fifths of the country into the Gulf of Mexico, and give 15,000 miles



River-steamer on the Mississippi.

of navigation. The Mississippi is navigable for steamers of considerable size to the rapids on the parallel of  $45^{\circ}$ , or within four degrees of the northern frontier; and the Missouri is ascended by steamers to the Great Falls, and is thus navigable for more than 2000 miles. The

Mississippi-Missouri system, both in length of stream and extent of navigable water, exceeds all other river systems of the world. The Colorado, the Sacramento, and the Columbia are the chief rivers flowing into the Pacific Ocean, and of these the Columbia is the principal navigable stream, but its navigation is frequently interrupted by falls and rapids.

In addition to the Great Lakes in the north, of which Michigan is entirely in the United States, there are thousands of lakes in the New England states, in New York, and in Minnesota, and there are numerous mountain lakes among the Cordilleras. The peculiar lacustrine character of the northern portion of the United States is the result of the glacial period. Great Salt Lake in Utah, about 4200 feet above the sea, forms the principal drainage centre of the vast plateau known as the Great Basin. This lake is over 80 miles long and from 20 to 32 broad, but for the most part exceedingly shallow. It contains several islands, and has some tributaries bringing fresh water; but it has no outlet save evaporation, so that its water is very saline in character.

## Coast.

Compared with that of Europe, the coast of the United States has few large openings or projecting peninsulas, although the Gulf of Mexico is of special climatic and geographical importance. The Atlantic coast is rocky and indented in the north, with many deep-water havens. To the south of Cape Cod the water becomes shallower and the harbours fewer, while south of the Delaware the shore is low and navigation is hindered by a fringe of narrow bars or sandbanks which extend to the Gulf of Mexico. The coast of Florida has coral reefs, a sign of the warmth and purity of the sea water; and the southern shore of the country is low and swampy. The chief feature of the Gulf of Mexico is the delta of the Mississippi, formed by the vast deposits brought down by the river as suspended matter. The mouth

of the Mississippi is essentially tideless. The western coast is steep and rocky, and, as a rule, has deep water close to it. It has few good harbours, those of Paget Sound, San Francisco, and San Diego being the three best.

### **Climate and Rainfall.**

The country lies within the temperate zone, but, owing to its great extent and varied physiographical conditions, it has almost every climatic characteristic of that zone. Reference to the maps will show that the isothermal lines run fairly east and west through the country, except where the two great mountain systems have influence. It will be well to observe the differences in the disposition of the isotherms for January and July, when the influences of the oceans and the Great Lakes is apparent, modifying the summer heat and winter cold, whereas in the interior and in the region of the mountain systems the extremes of heat and cold are abnormal. On the whole, the western coast, which is washed by the warm ocean current of the Pacific, is warmer than the Atlantic seaboard, along which a cold Polar current flows. The country has extremes of climate, the annual range of temperature being very great. In winter there may be a difference of  $120^{\circ}$  between two places situated respectively on the northern and southern borders, and in summer the daily variation of a place may be from  $40^{\circ}$  to  $50^{\circ}$ . New York has a range of about  $40^{\circ}$  and New Orleans of  $30^{\circ}$ . The climate in the south is semi-tropical. Storms of great intensity sometimes pass over the central states, and these tornadoes do much damage to towns and forests.

The absence of east and west mountain ranges allows cold northerly winds to sweep through the whole country. With regard to the rainfall, the eastern part of the country is well watered; but the western portion, except a strip between the Sierras and the Cascade range and the Pacific Ocean, has an insufficient supply,

and irrigation is necessary for purposes of agriculture. Rainfall decreases from south to north, and the Great Basin, which includes Nevada, Utah, Arizona, and South California, is almost rainless.

### Plants and Animals.

In some places near the Pacific coast there is rain enough for forests to thrive ; but there are portions which are veritable deserts, without plant and animal life. In the dry western regions may be found the bunch grass, growing in tufts or bunches, the sage bush, and the cactus, which grows in great variety and attains the height of trees.

The bison, which once roamed the prairies and arid plains east of the Rocky Mountains, is no longer in evidence, but the prairie wolf, the antelope, and the rabbit are abundant. The puma lives among the mountains, grizzly bears are rare, and deer and elk are found in the north-western states. When America was first visited by Europeans, the forests of the United States abounded in deer, moose, caribou, wolves, and foxes ; beavers built dams in the streams, the mink and otter fished in the waters, and bears roamed at will. Now those animals have been mostly destroyed, except some that live in the mountain and forest regions.

### Agriculture and Stock Raising.

The immense area that was clothed with forests and covered with prairie grass has been cleared and ploughed, and agriculture now employs nearly half the working population of the United States. The staple grain crop is maize, or "corn," as it is generally called, and its cultivation is carried on in all the states, but especially in those around the upper courses of the Mississippi-Missouri system. The quantity of maize grown is five times that of wheat and is largely used in the feeding of swine and other animals. Oats and

barley are grown to a smaller extent than wheat; rye and buckwheat are grown in the northern states, and rice in South California. Cotton and tobacco are the staple crops in the south-eastern states, where the negroes form a large proportion of the population and where the heavy rainfall occurs in the summer. Sugar



An orange plantation in California.

is obtained from the cane in Louisiana and Texas, from beetroot in California and Michigan, and from the sugar maple in the north-east. Fruits of the temperate regions thrive in the United States, and oranges are grown on a large scale on the irrigated fields of California. On the ranches of Texas and Nebraska there

are enormous herds of cattle, which are either shipped from the Atlantic ports to Europe or slaughtered in the great stock-yards of the meat centres, and exported either frozen or tinned. Swine are kept all over the country, but mainly in Iowa, Illinois, and Missouri, the corn states, and sheep are farmed in Texas and California where the drier climate is favourable for their rearing.

### **Minerals.**

Coal is found in vast areas, but the chief producing state is Pennsylvania, which yields two-thirds or more of the total quantity mined in the country. Iron-ore and limestone are also found in the neighbourhood, and so this state has become the centre of the steel and iron manufacture. Petroleum and natural gas occur abundantly in Pennsylvania, New York, Ohio, and Indiana. Copper is found on the shores of Lake Superior, in Arizona, and in Montana. Among the other minerals there are deposits of tin, lead, gold, and silver, the two latter being found chiefly in the western highlands. The building stones are abundant, but no valuable precious stones of any quantity have been found.

### **People, Distribution of Population, Language, and Religion.**

The population of the United States according to the first census taken in 1790 was about 4,000,000; at the present time the population is estimated at 107,000,000, of whom nearly 11,000,000 are negroes. It will thus be seen that in rather more than 120 years the population has increased twenty-sevenfold, and every year it is largely augmented by immigrants from the United Kingdom, Germany, Canada, Sweden, Norway, Russia, Austria, Italy, and Poland. There are about 300,000 Indians, who live in reservations in some of the western states, and nearly 150,000 Chinese and Japanese on the Pacific coast. After the thirteen

colonies on the east gained their independence in 1776 an active western migration of the population began. Hitherto the Appalachian Mountains had barred the progress of the people, but at last the westward advance began and prospered, till the arid plains of the far west were reached. Louisiana was purchased from France in 1803, Florida from Spain in 1819, Oregon, Texas, and California were afterwards acquired by exploration, conquest, and purchase. The discovery of gold in California in 1848 marks a further stage in the western advance, since which time the western part of the United States has been settled. The population in the eastern states is still the densest. There are 28 cities with more than 200,000 people, and 50 cities with over 100,000 people. Notwithstanding the enormous influx of immigrants, it is found that they soon become Americanised. The immigration of paupers is no longer permitted, and foreigners are not allowed to enter the country on contract to do any specific work. Since slavery was abolished by the Civil War in 1861-5, the number of negroes has increased in the south, although many have migrated to the north and west. Perhaps the most interesting fact in recent history is the acquisition by the United States of territory outside its own boundaries. Alaska was bought from Russia in 1867; and after the war with Spain, the Philippine Islands and Puerto Rico were ceded to the States in 1898. The Hawaiian Islands, and Tutuila in Samoa have also been added in recent years.

Although the population is so large and cosmopolitan, the English language is generally used. Each state has a good system of free public schools, and the universities and colleges are provided on a generous scale, being often established and subsidised by wealthy men.

With regard to religion, there is no state church, but all denominations are represented. The Protestants have the largest number of adherents, but Roman Catholics claim upwards of 12,000,000 of the population.

## Administration.

The government is based on the constitution framed in 1787, and is entrusted to three authorities, the executive, the legislative, and the judicial. The executive power is vested in a President, who holds office for four years; and the legislative power in the Congress, consisting of a Senate and a House of Representatives. Each of the 48 states has its own constitution and within certain limits makes its own laws.

## Industries and Manufactures.

The chief industries are those connected with lumbering, fishing, agriculture, grazing, mining, and manufacturing. It is worth noting that the principal manufactures are carried on with the aid of water-power, and the application of electricity by using this source of power at Niagara and elsewhere is advancing rapidly. The chief industries using water-power are saw-milling, flour-milling, cotton-spinning, and the making of wood-pulp. The use of coal is, however, increasing rapidly, and as its cost is less than in our own country, the manufactures of the United States have received a great stimulus. It may be added that the protective fiscal policy of the United States has also assisted in the same direction.

## Trade and Commerce.

The United States is one of the great commercial nations of the world. Great Britain is one of her best customers, taking nearly one-half of her exports, and France, Italy, Spain, Holland, and Canada come next in order. The chief exports are raw cotton, wheat and wheat-flour, iron and steel goods, meat, maize, bacon, hams and lard, mineral oil, coal, timber, copper, tobacco, and living animals; and sugar and molasses, coffee, hides and skins, chemicals, raw silk, cotton and woollen

goods, india-rubber, fruit, and tea are among the imports.

Much of the foreign trade is carried under foreign flags, British ships having the chief share, but only vessels built in the United States are allowed to engage in the coasting trade. By far the larger part of the foreign trade is centred in New York, New Orleans, Boston, Philadelphia, Baltimore, San Francisco, and Galveston. The great lakes are open for navigation for about two-thirds of the year. Mail steamers leave the Atlantic ports for Europe, and the Cunard, White Star, and other lines have ships of great speed and luxury.

### Internal Communication.

Besides the enormous traffic by rivers, canals, and lakes, the United States has the most extensive railway system in the world; there are about 266,000 miles of railway. The older eastern states are covered with a network of railways connecting the chief towns. The western lines were built through an undeveloped country, and towns afterwards grew up on them. It is noticeable that the main lines run east and west transversely to the lines of river communication. The most important railway centres are New York, Chicago, and St Louis, and there are numerous junctions with the Canadian railways in the north and with the Mexican in the south. Among the longest lines three may be noted. The *Central Pacific*, with direct communication from New York to Chicago, runs from Omaha westward over the Rocky Mountains, and descends to Oakland, whence there is a ferry to San Francisco. The distance of about 3500 miles from New York to San Francisco is covered in five days by express. The *Northern Pacific* connects Duluth on Lake Superior with the wheat centres of Minnesota and North Dakota, and runs on to Portland on the west coast. The *Southern Pacific* runs from New Orleans through Texas to Los Angeles on the coast of California.

## Towns.

These may be considered in four divisions : (1) the capital ; (2) the seaports ; (3) the lake ports ; (4) other towns.

(1) *Washington*, in the district of Columbia, on the Potomac river, is the capital of the United States.



Washington: the Capitol.

The government buildings are fine and imposing, and the Capitol, whose dome is surmounted by a bronze figure of Liberty, is conspicuous on an eminence. Originally "Federal City," it was named after Washington and became the capital in 1800. It is often called the "city of magnificent distances." The President

lives at the White House, a building of freestone in the classic style.

(2) *New York* is without a rival in America in respect of the amount of its foreign commerce. It sends out half the exports from the United States, and two-thirds of the imports pass through it. It has an excellent natural harbour and the advantage of a way into the interior by the Hudson River and the Erie Canal. *New York* is a great financial centre, and has numberless manufactories. *Boston*, in Massachusetts, ranks next to *New York* as a port. It has an excellent harbour and is one of the best built cities in the United States. *Boston* is of considerable historic interest, and the "hub of the universe," as it is called, has long been noted for the interest its citizens take in literature, science, and art. It is connected with *Cambridge*, on the other side of the river Charles, by several bridges. *Philadelphia*, in Pennsylvania, at the junction of the Schuylkill and Delaware rivers, has a large export and import trade; and one of the most complete railway and canal systems in the world radiates from this centre. It is the chief manufacturing and engineering city of the States. *New Orleans*, near the mouth of the Mississippi, ranks next to *New York* in its export trade, of which cotton is the most important. The river is protected from the sea by high banks, or *levées*, to prevent it from flooding the adjoining land, and the channels are constantly dredged to avoid silting up. *Baltimore*, on Chesapeake Bay, has a large export trade, chiefly in cotton, petroleum, tobacco, and grain, and is a busy manufacturing town. *San Francisco*, on a land-locked bay of the Pacific, entered by the Golden Gate, is the commercial centre of the Pacific states and the most important western harbour of America. Mail steamers from Japan, China, and Australia connect the Atlantic lines by the Pacific railways at this great port. *Charleston* in South Carolina, *Savannah* in Georgia, *Galveston* in Texas, and *Mobile* in Alabama, are great cotton ports.

(3) *Chicago*, in Illinois, on the south-west of Lake Michigan, is the greatest inland city of America and the chief port for the wheat and lumber trade on the lakes. Its position secures it all the eastward trade by lake and rail. Chicago is the chief railway centre in the States and has extensive iron manufactures and steel ship-building. The pork-packing and meat-canning factories are among the most extensive in the world. *Milwaukee*, on Lake Michigan, has a considerable lake trade and is a great manufacturing centre. *Cleveland*, the largest town in Ohio, has a great trade in iron-ore and coal and large manufactures. *Detroit*, on Lake Erie, is the most important town in Michigan. *Rochester*, on Lake Ontario, and *Buffa'o*, on Lake Erie, are both of considerable importance; and *Duluth* and *Superior*, two towns on opposite shores of Lake Superior, have a large trade in grain and iron ores.

(4) *Pittsburg* and *Alleghany*, twin cities at the head of the Ohio, form the chief centre of the Pennsylvanian iron production and manufacture. *Cincinnati*, lower down the Ohio, has an enormous trade in pork. *St Louis*, on the Mississippi, a little below the junction of the Missouri, is situated on one of the most important crossing-places of the river; it is the chief port on the river and has a vast trade both by river and rail. *Minneapolis* and *St Paul*, on opposite banks of the Mississippi, have an immense trade in flour-milling and railway transport. *Omaha*, in Nebraska, and *Kansas City*, in Missouri, are two crossing-places of the Missouri. They are both largely engaged in the meat-packing trade; the former is a railway junction and the latter an agricultural centre.

## Mexico.

### Position and Size.

Mexico is a federal republic which bounds the United States on the south and tapers to Guatemala,

its southern boundary. In shape this country has been compared to a cornucopia ; and the two peninsulas, Lower California and Yucatan, enclose the Gulf of California and the Bay of Campeché. Mexico extends 2000 miles in length, and varies in breadth from 1000 miles in the north to 130 miles at the isthmus of Tehuantepec. The area of the country is nearly 767,000 square miles, or about nine times that of Great Britain. It once included California, Arizona, New Mexico, and Texas.

### Surface.

Mexico is divided by the low-lying Tehuantepec isthmus into two geographical regions. The southern section belongs partly to the Central American mountain system and partly to the Yucatan plateau formation. The section north of the isthmus may be described as a plateau enclosed by two mountain ranges—the Eastern and Western Sierra Madres, which rise to 9000 feet and upwards. Both ranges run nearly parallel with the shore line, but the Pacific range is the loftier and more continuous. The Californian peninsula is traversed by the Sierra de la Giganta, with a mean height of 4000 feet. The volcanoes of Mexico are numerous, but only one or two are active. The highest are Orizaba (18,250 feet) and Popocatepetl (17,540 feet), and all the higher cones are snow-clad for a great part of the year.

The rivers of Mexico are of little use for navigation, and few tropical lands are less favoured by fertilising streams than Mexico. Apart from the Rio Grande del Norte, which forms the northern boundary for several hundred miles, and the Colorado, there is not a single river much over 600 miles long or navigable for sea-going vessels for 50 miles from its mouth.

There are no large lakes in Mexico ; the largest is Chapala on the Lerma. There are some lacustrine basins with little depth, but around the city of Mexico

there is a chain of six small and shallow basins which represent the remains of a great inland sea.

### **Climate and Rainfall.**

Mexico is intersected by the Tropic of Cancer, but, owing to the peculiar conformation of the land, the climate is determined more by altitude than by latitude. The southern lowland region has a maximum temperature of  $105^{\circ}$ , but over the greater part of the plateau a mild, temperate climate prevails, and Mexico, 7430 feet above sea-level, enjoys a much more genial climate than New York or Chicago, which are either at sea-level or a little above it. In central Mexico there are three zones of vertically disposed climate: the *Tierra Caliente*, or Hot Zone, extending from sea-level to 3000 feet elevation; the *Tierra Templada*, or Temperate Zone, between 3000 and 5000 feet; and the *Tierra Fria*, or Cold Zone, above 7000 feet. The "cold zone" is really a temperate region, enjoying one of the most delightful and healthy climates in the world.

The rainy season occurs between May or June and November or December, and at times there are torren-tial rainfalls. The highest rainfall is at Monterey ( $25^{\circ} 40' N.$  lat.), where an annual average of 138 inches has been registered. At the city of Mexico the annual average is 30 inches.

### **Plants and Animals.**

Mexico has a very diversified native flora, which is due to the vertical arrangement of its climatic zones, the fertility of its soil, and a good rainfall on the escarpments of the plateaux. The country is also capable of growing all the economic plants of the world. The forest growths comprise trees such as cedars, rosewood, and mahogany, valuable for cabinet work; dyewoods; oleaginous plants including the olive, almond, and coco; medicinal and resinous species yielding camphor, rubber, etc. The coco-nut palm

and banana are thoroughly acclimatised, almost running wild. Among the cultivated plants are coffee, sugar-cane, tobacco, cotton, agave, henequen, coco-vanilla, rice, maize, and the pineapple. From the agave, or American aloe, is derived the national fermented beverage known as pulque. From the henequen variety of aloe is obtained a strong cordage, largely exported to the United States and England.

With regard to the fauna, Mexico is a land of transition between North America and South America. Bears, wild boars, bison, beavers, martens, skunks, and squirrels are among the mammals that justify Mexico being included in North America, while the tapir, five varieties of monkeys, and such reptiles as the boa and the iguana identify it with South America. Mexico is famous for the variety and splendour of its birds, which include the toucan, parrot, hummingbird, and the lovely little quetzal, which was revered if not worshipped by the Aztecs, who reserved for royalty the exclusive use of its gorgeous plumage—scarlet, indigo-blue, and peacock-green, with two magnificent tail-feathers two or three feet long.

### People and History.

The people of Mexico may be classified as native Indians, Spaniards, and “mestizos,” who are a mixture of the natives and Spaniards. The native population is decreasing and forms under 40 per cent. of the total; the white population is about 20 per cent.; and the mestizos form the remainder. The Indians, speaking 150 dialects in three main groups, are kindly, courteous, and law-abiding.

Cortez conquered the Aztec and Pueblo Indians in 1521 and called their country the Province of New Spain. It belonged to the conquerors till 1821, when, as the result of a rebellion, an empire was proclaimed, followed by a republic in 1823. This continued till 1864, when there was a second empire, but the republic was re-established in 1867. The Federal Republic is

composed of 28 states, two territories, and one federal district. There are two houses of parliament, and the President is elected for four years. The population is about 15,000,000, of whom many are very ignorant. The Mexicans, like Spaniards in other parts of the world, are chiefly Roman Catholics.

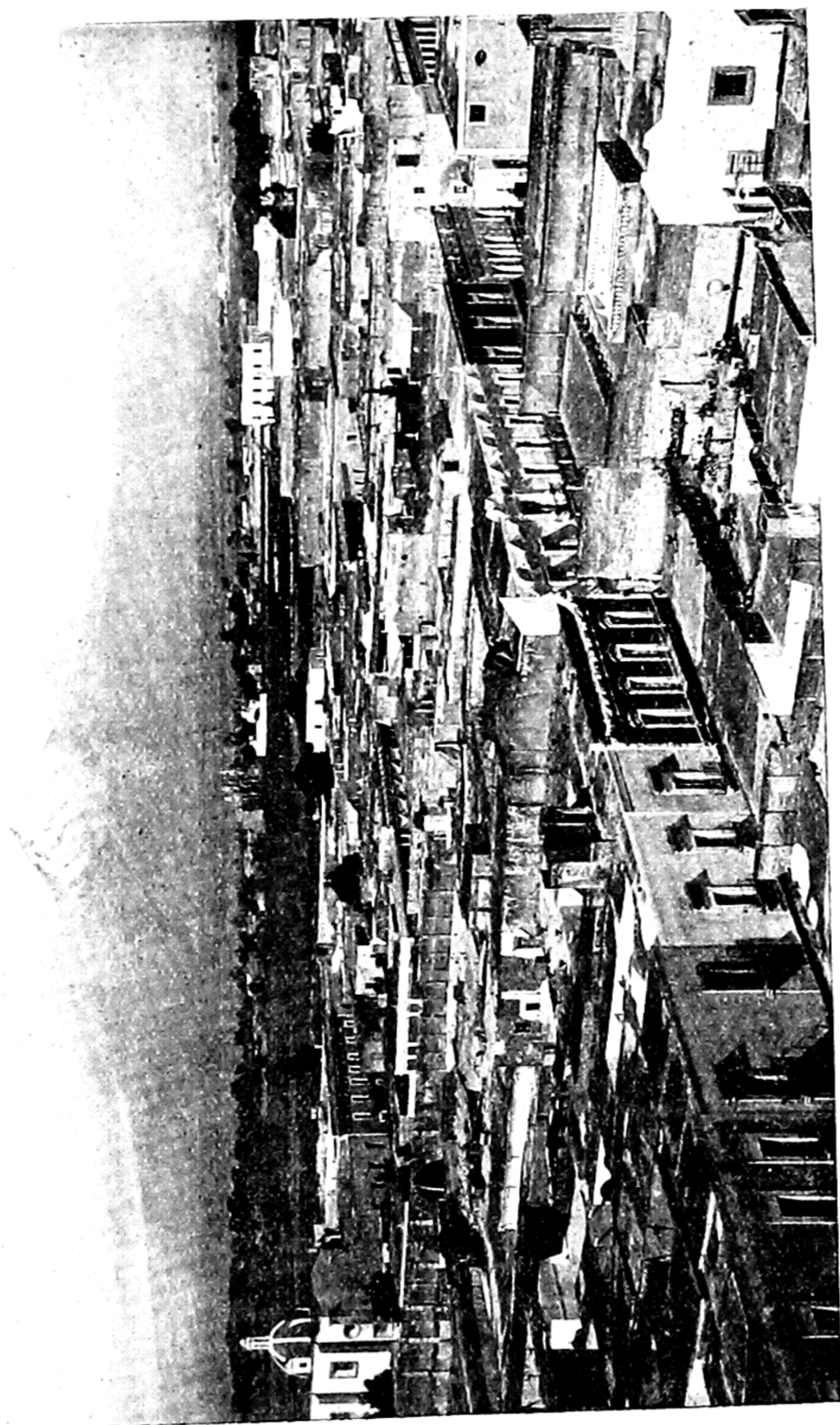
### Industries, Trade, and Communications.

Agriculture is steadily developing, and on the irrigated farms are raised the products of the temperate zone, such as wheat, corn, and beans. The Mexican farming methods are very crude and are a curious mixture of ancient Aztec customs and those of Spain. The wooden plough and the wooden-wheeled cart drawn by oxen may still be seen in this country. The cultivation of coffee is one of the chief industries. Mexico is a great mining country, being the second silver-producing nation in the world. There are mines of copper and lead, and gold is also produced. The manufactures of Mexico are not important, but there is some hand-work on a small scale. Tobacco factories give employment to many; some earthenware is made; but the chief manufacture is coarse cotton-cloth. Of the exports, precious metals represent more than half, and the greater part of the trade is with the United States.

Railways are increasing; the Atlantic and Pacific ports are all connected; and the Tehuantepec railway from Puerto Mexico to Salina Cruz is of the greatest importance. The roads are bad, and transport over large areas is almost entirely by donkeys.

### Towns.

*Mexico*, the capital, is the finest city in Spanish America. It lies at a height of over 7000 feet in the centre of the tableland, nearly midway between the two oceans, in a zone of perennial spring. It is regularly laid out with broad streets and forms a perfect square. Its buildings, especially the cathedral, are noteworthy,



Puebla, with Popocatepetl in the background.

and the surroundings of the city are delightful. *Puebla*, founded in 1531, is situated near one of the ancient cities, "pueblos," of the Aztecs. The architecture is finer and more original than that of Mexico. *Vera Cruz*, the chief Mexican seaport on the Atlantic, is connected by railway with the capital, but is likely to be supplanted by *Tampico*. *Acapulco* has the finest natural harbour in Mexico, and was a place of great note in the early Spanish days. *Merida*, the capital of Yucatan, is connected by railway with the new seaport of *Progreso*.

## Central America.

### Position and Size.

Central America, comprising six republics and the British colony of Honduras, occupies the region between North and South America. The total area is about 173,000 square miles, or more than twice that of Great Britain.

### Surface.

Most of Central America is mountainous and the surface is similar to that of southern Mexico. The highest peaks are in Guatemala and Costa Rica, and in the former state there are mountains that are nearly 14,000 feet high. The intermediate ranges are of moderate elevation. Numerous volcanoes are found in a long broken line on the Pacific coast, and in their neighbourhood earthquakes are common and sometimes very destructive. The eruption of Omotepi in 1835, on an island in Lake Nicaragua, is famous as one of the most disastrous in historical records.

It will be seen that the main watershed is near the Pacific coast, hence the rivers running to the Atlantic are longer and, in some cases, navigable. There are many lakes, of which Nicaragua is the largest. It was

proposed to use the river San Juan, flowing from Lake Nicaragua to the Caribbean Sea, in the formation of a ship canal to join the two oceans through this great lake. This plan, however, has given way to the inter-oceanic ship canal in Panama.



The Panama Canal: at the Atlantic mouth.

## The Panama Canal.

In 1878 De Lesseps, the famous French engineer, formed a company to make a sea-level waterway through the Isthmus of Panama. The work was actually begun, but owing to extravagance and mismanagement, the effort failed. Another French Company undertook the completion of the work, but this also ended in

failure. In 1901 the United States undertook the construction of the canal, and for this purpose it obtained the lease of a strip of land in Panama 10 miles wide and 45 miles long, known as the Canal Zone. The canal is 44 miles long from deep water to deep water, but only 40 from tide-end to tide-end. The minimum width at bottom is 300 feet, and the minimum depth 41 feet. The canal has two remarkable pieces of engineering work—the gigantic dam at Gatun,  $1\frac{1}{2}$  miles long and  $\frac{1}{2}$  mile thick at the base; and the Culebra Cutting, 9 miles long, the largest of its kind in the world. As many as 50,000 employés were at work on the canal, which cost about £80,000,000. Opened in 1914, the canal is navigable by the largest vessels and shortens the distance between British ports and those on the western coasts of America by thousands of miles. Lord Bryce, writing of its construction, said “it is the greatest liberty man has ever taken with nature.” The influence of the Panama Canal has transformed the Caribbean coast of Central America. Swamps have been drained, jungles cleared, water and sanitation systems installed, and the pest of mosquitoes wiped out. All along the coast-line are now thriving and populous towns, while the jungles have become fruitful banana plantations.

### **Climate and Rainfall.**

It will be seen that the whole of Central America is within the tropics, where the trade-winds prevail. The mountain system influences both temperature and rainfall. In the coastal regions the mean annual temperature is about  $80^{\circ}$ , while at an altitude of 7000 feet it is only  $58^{\circ}$ . Where the east or north-east trades blow, the Atlantic slopes have a heavier rainfall than those of the Pacific. The mountains of Guatemala have an annual rainfall of 195 inches on their northern slope, while their summits and southern slopes receive only 100 inches and 27 inches respectively. The driest regions are those protected by the mountains from both oceans.

## Plants and Animals.

On the moist Atlantic side, a large portion of Central America is covered with dense tropical forests yielding mahogany, rosewood, logwood, and other valuable cabinet and dye-woods, as well as palms, creepers, and tree-ferns. The rubber-tree also grows well and the agave is found in the dry regions. Cacao is cultivated on the hot lands and coffee in the temperate lands, while grain is grown in the colder regions above 6000 feet. Bananas, sugar, tobacco, and indigo are among the other products of Central America.

Apart from insects and fishes, animal life is comparatively scarce. Monkeys are plentiful, and the jaguar is the largest beast of prey. Alligators, iguanas, and turtles abound, and poisonous snakes are common in the hot and moist regions. Bird-life is rich and is represented by numerous species of humming-birds, parrots, pigeons, toucans, and the exquisitely beautiful quetzal.

## People and History.

The population of rather more than 3,000,000 is chiefly found in the drier parts, especially on the highlands, which are free from malaria. On the low, hot plains the population is scanty. The people are mainly Indians, Spaniards, or half-breeds, speaking the Spanish language, although there are said to be 30 Indian languages spoken by the natives. The Spaniards made themselves masters of this region in the early part of the sixteenth century, and retained their hold till 1823, when Guatemala became independent and the rest declared themselves the United States of Central America. In 1839 they broke up into five separate republics, and were joined by Panama in 1903. Each of the six republics has a government modelled after that of the United States; but owing to the ignorance of the people and the uncivilised condition of the great majority, there is a state of

unrest, with little development of the resources of the country. The large majority of the people are Roman Catholics.

### Trade and Communications.

Some gold and silver are mined in Honduras and Nicaragua. Most of the people live by agriculture, the collection of forest produce, and cattle-rearing. The export of mahogany, logwood, india-rubber, and coffee is considerable. The communications are very defective, but railways have been constructed or planned to join the capitals and the chief seaports. Reference has already been made to the inter-oceanic canals, and there is regular steamer communication on some of the lakes. The Panama Railway, 47 miles long, was opened in 1855. It reduces the distance from New York to Hong Kong by 5000 miles. The best seaports are Belize, Truxillo, and Greytown.

### Divisions and Towns.

The following is a list of the six divisions with their capitals:

<i>Guatemala.</i>	Guatemala.
<i>Salvador.</i>	San Salvador.
<i>Honduras.</i>	Tegucigalpa.
<i>Nicaragua.</i>	Managua.
<i>Costa Rica.</i>	San José.
<i>Panama.</i>	Panama.

## British Honduras.

The Crown Colony of British Honduras has an area of 8592 square miles, but is nowhere conterminous with the Republic of Honduras, from which it is completely separated by Guatemala. The southern part of the colony is occupied by the Cockscomb range, whose highest point is Mount Victoria, 3700 feet high. The

slopes of the Cockscomb range form healthy resorts for the English colonists on the strip of low-lying coastlands. Tropical products of commercial value, such as maize, rice, bananas, pine-apples, oranges, coffee, cacao, cotton, and rubber may be seen flourishing in the same tract of country. The chief resources are mahogany and logwood, by which the first English settlers, the buccaneers, were attracted to this district. The capital, *Belize*, has been for over 300 years the chief centre of the mahogany trade. Although this colony was settled by the English early in the eighteenth century, it was not recognised as British territory till 1798. Since that date it has been a crown colony administered by a governor and two councils. The population of over 42,000 is all coloured, except about 500 white people.

## The West Indies.

### Position and Extent.

The West Indies are an archipelago curving for more than 1000 miles from near the peninsula of Yucatan to the Gulf of Paria. Including islands and islets they number many hundreds, but only about 50 are inhabited. The total area is a little over 90,000 square miles ; and the islands vary in size from Cuba, the largest, with 45,000 square miles, to little rocks and "cays," or reefs, just rising above the water.

### Structure and Divisions.

The West Indies are the scattered island remains of an Antillean continent, which at one time extended for 1200 miles from the western extremity of Cuba to the Virgin Islands. The earth movements which broke up this Antillean continent are probably still in progress, for the whole region is often affected by earthquakes.

This extensive and now partly submerged tract was

traversed throughout its length by a lofty range, whose peaks rise thousands of feet above the sea-level. The highest points, of nearly 12,000 feet, are in Haiti; in Jamaica and Cuba there are peaks of 7000 and 8000 feet; and in St Thomas they fall to 1500 feet. North of the Greater Antilles are the Bahama Islands, which consist of low coralline reefs and islands which rest on a bank in continuation of Florida. The remaining islands of the West Indies are generally known as the Lesser Antilles, the northern half of the curve to Dominica being called the Leeward Isles, and the southern half to Grenada the Windward Isles. These islands are of two types: (1) the *volcanic*, comprising St Kitts, Montserrat, West Guadeloupe, Dominica, Martinique, St Lucia, St Vincent, and Grenada; (2) the *sedimentary*, comprising Anguilla, Barbuda, Antigua, East Guadeloupe, Barbados, Tobago, and Trinidad. The last island is geographically part of the mainland of South America, from which it is separated by the strait known as the Serpent's Mouth.

## Climate and Productions.

The islands have a fine tropical climate and an ample rainfall. The mean annual temperature is about 80° and the range is very small. The trade winds blow all the year and consequently affect the rainfall and climate. From October to March strong north-east trades are experienced, and from August to October there are terrific cyclones, which uproot the strongest trees and at times devastate cities.

The chief of the varied products are the sugar-cane, coffee, cotton, cacao, tobacco, pimento, vanilla, ginger, bananas, pine-apples, bread-fruit, and coco-nuts. The islands have rich soil, and at one time were the most flourishing of tropical colonies. During the last century, owing to the use of beet-sugar and the failure of the labour supply after the emancipation of the slaves, they declined in prosperity.

## People and History.

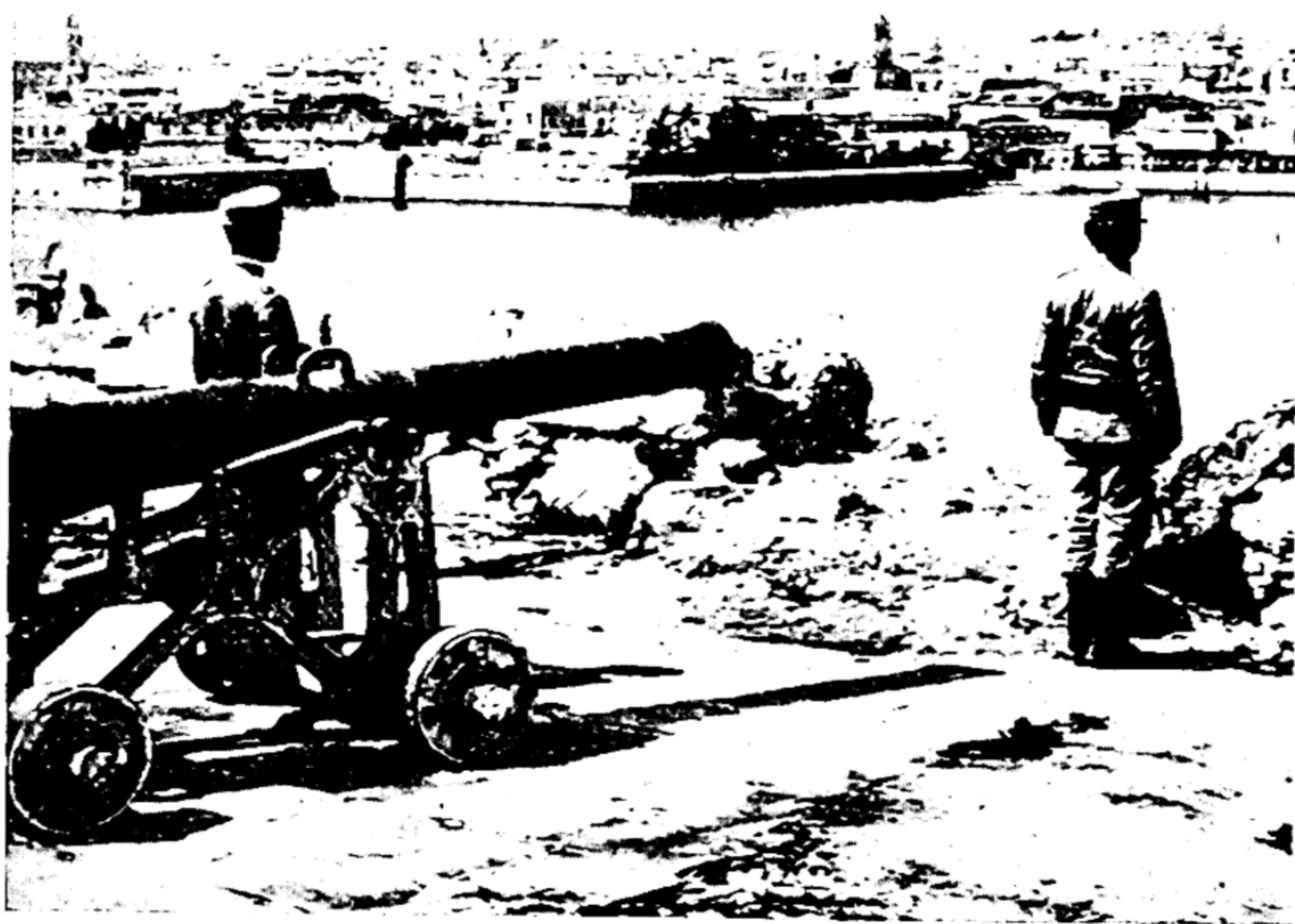
When the West Indies were discovered by Columbus in 1492, they were inhabited by the Caribs or Caribals. As Columbus thought these islands were connected with India, he wrongly named them West Indies and their natives Indians. These natives have almost entirely disappeared, and the negro population are the descendants of the slaves imported from Africa to work on the sugar plantations. The present population is estimated at 7,500,000, and the negroes greatly outnumber all the other people. The islands have white people from Britain, Spain, France, Holland, and other European countries, and in recent years Indian and Chinese coolies have been introduced to work in the plantations. It is worthy of note that the geographical position of the West Indies made them for two centuries the easiest avenue of approach from Europe to the American continent, for the voyage was generally made by the Canaries or Cape Verde Islands, whereby a short ocean passage and a favourable wind were secured; and it was this geographical position that led to negro slavery, which was abolished in the British West Indies in 1832.

The islands of Cuba and Haiti are independent; Puerto Rico, St Thomas, St John, and St Croix belong to the United States; and the remaining islands are the possessions of Britain, France, and Holland.

## Cuba.

This is the largest island, with an area of 44,164 square miles and a population of 2,627,536. *Havana*, the capital, is the only large town in the West Indies. It is situated on a fine bay and has an excellent natural harbour. The island is the richest of the West Indies and produces sugar, tobacco, cacao, cotton, rice, coffee, fruits, and timber. The island was discovered by

Columbus in 1511 and settled by the Spaniards, who held it till 1899, when it was taken under the protection of the United States as the result of a short war. In 1902 Cuba became an independent republic.



Havana.

## Haiti.

This large island of 10,000 square miles is better known by its old name of Hispaniola, which was given to it by Columbus on its discovery in 1492. It consists of two independent negro republics, Haiti in the west and San Domingo in the east; *Port au Prince* is the capital of the former and *San Domingo* of the latter.

Much of the island is covered with forest yielding mahogany, logwood, and other tropical woods; but the coastal districts produce sugar, tobacco, coffee, and bananas.

## Puerto Rico.

Puerto Rico was discovered by Columbus in 1493 and afterwards settled by the Spaniards. As the result of the Spanish-American War, it was ceded to the United States in 1898. It is less wooded than Cuba and better cultivated. Sugar and tobacco are raised, and excellent coffee is one of the most important products. The larger commercial towns are mostly seaports, and *San Juan* is the capital.

## The British West Indies.

The British West Indies are under the direct control of the Colonial Office and are in six divisions: (1) Jamaica; (2) the Bahamas; (3) the Leeward Islands; (4) the Windward Islands; (5) Barbados; (6) Trinidad and Tobago. It may be noted that historically we may group these islands in three divisions. First, the islands, such as Barbados, originally settled and always retained by the British; secondly, islands such as Jamaica and Trinidad, that were originally settled by Spaniards and acquired by British conquest; and thirdly, islands such as St Lucia, and Grenada, that were colonised by British, French, or other Europeans and then passed from one power to another by treaty.

(1) *Jamaica* is the third in size of the West Indies. It was discovered by Columbus in 1494 and settled by the Spaniards, from whom the English took it in 1655. *Kingston*, the capital, has a fine harbour and does half the trade of the island. The people are mainly negroes or mulattoes, and the main industry is connected with

agriculture. The chief product is sugar-cane, from which sugar-molasses and rum are obtained. Early vegetables and fruits, such as oranges and bananas, are grown, and Jamaica ginger is specially famous.

(2) The *Bahamas* were the first islands discovered by Columbus on his first voyage in 1492. They consist of 12 large islands and hundreds of islets, or "cays," as they are called, and are all of coral formation. They produce large quantities of pine-apples, and sponges are a staple export. The capital and only town of importance is *Nassau*.

(3) The *Leeward Islands* include the Virgin Islands and the chain of British islands as far as Dominica. The smallest of the group is Montserrat, which yields a characteristic export—the lime fruit and the lime juice prepared from it.

(4) The *Windward Islands* are south of Martinique and include St Lucia, St Vincent, Grenada, and the Grenadines. *Castries*, in St Lucia, has probably the finest harbour in the West Indies and is an important naval station.

(5) *Barbados*, the most easterly of the West Indies, enjoys the proud position of never having belonged to any other power than Britain, by whom it was settled in 1625. It has a dense population, largely employed on the cane plantations which cover the island. The chief harbour and capital is *Bridgetown*, which is important as one of the chief centres for steamers in the West Indies.

(6) *Trinidad and Tobago*. The former is a considerable island lying opposite the delta of the Orinoco, and the latter is farther to the north-east. Trinidad has more than one-third of the West Indian trade. Cacao is the most characteristic product, its value being twice that of the sugar. Asphalt, from the great Pitch Lake of 90 acres, largely used for pavements, is a valuable article of export. *Port of Spain* is the capital and chief seaport.

## French West Indies.

Guadaloupe and Martinique, with a few smaller islands, are the remains of the flourishing West Indian possessions of France of the seventeenth century.



The ruins of St Pierre shortly after the earthquake  
(Mont Pelée in the background).

The eruption of Mont Pelée on Martinique in 1902 destroyed the seaport of St Pierre and 30,000 people.

## Dutch West Indies.

These include the three considerable islands of Curaçao, Aruba, and Bonaire, and some smaller islands. The first island is famed for the fruit used in flavouring the well-known liqueur named after the island.

## CHAPTER XII

### SOUTH AMERICA.

#### Position and Size.

South America, the smaller half of the New World, is about twice as large as Europe, and its area of seven million square miles is nearly one-seventh of the world's land surface. The greater part of this continent lies south of the equator and at least four-fifths of its area is within the tropics. It is almost surrounded by the ocean—the Atlantic is on the north and east and the Pacific on the west—and it is joined to the northern continent by the Isthmus of Panama, about 45 miles in width.

South America resembles North America in shape, for both continents are triangular in outline, widest in the north and tapering to the south. It may be noticed that the outline of South America is very regular, and the continent is even more compact than Africa. There is an absence of peninsulas and there are few islands off the mainland.

#### Surface and General Features.

The physical features of North America and South America have some striking resemblances, and we may specially note that the chief mountain systems are on the two sides and between them are broad plains of vast extent. The western highland of South America has mountains of recent formation, and in structure it is somewhat similar to the Rocky Mountains. The

western highland, known as the Andes, extends throughout the continent from north to south for a distance of 5000 miles along the whole of its Pacific coast. Like the Rocky Mountains, this system consists of triple, double, and single ranges in different parts. The base is a great mountain mass whose surface has a mean elevation of 14,000 feet. Upon this base volcanic domes have been piled, and these form the highest peaks of the Andes. The Cordillera of the Andes, or the western mountain land, is almost a continuous volcanic chain. The volcanoes occur along a broken line parallel to the Pacific coast, and are found at intervals separated by mountain belts which are not volcanic. These volcanic cones are the highest peaks of the Andes; Aconcagua, in Chile, 23,000 feet high, and Chimborazo, in Ecuador, are extinct volcanoes. Some of the volcanoes are still active, and many of the eruptions have been very violent. Frequent and destructive earthquake shocks are also experienced in this region. The Andes are still rising, and this moving of the rocks causes the earth to tremble.

On the eastern side of South America the most extensive highlands are in Brazil, where they reach a height of 10,500 feet, and in Guiana, where the greatest elevation is said to be 11,000 feet. The highlands of Brazil consist of a plateau of ancient rocks, which once extended across the Atlantic and was probably connected with the plateau of Africa.

The remainder of South America is lowland and includes the basins of the Amazon, the La Plata, and the Orinoco, thus forming a vast plain extending from South Argentina to the Caribbean Sea. The basins of the Amazon and the La Plata were once occupied by the sea, but waste from the mountains, washed down by rain and rivers, has filled this depression and formed the broad plains of this region. These plains are known as the *Llanos* of the Orinoco, which are grass plains or desert tracts according to the season; the densely wooded *Selvas* of the Amazon; and the *Pampas* of

the La Plata, which are grassy in the north but rocky in the south.

### Rivers and Lakes.

All the large rivers flow to the north or east coast.

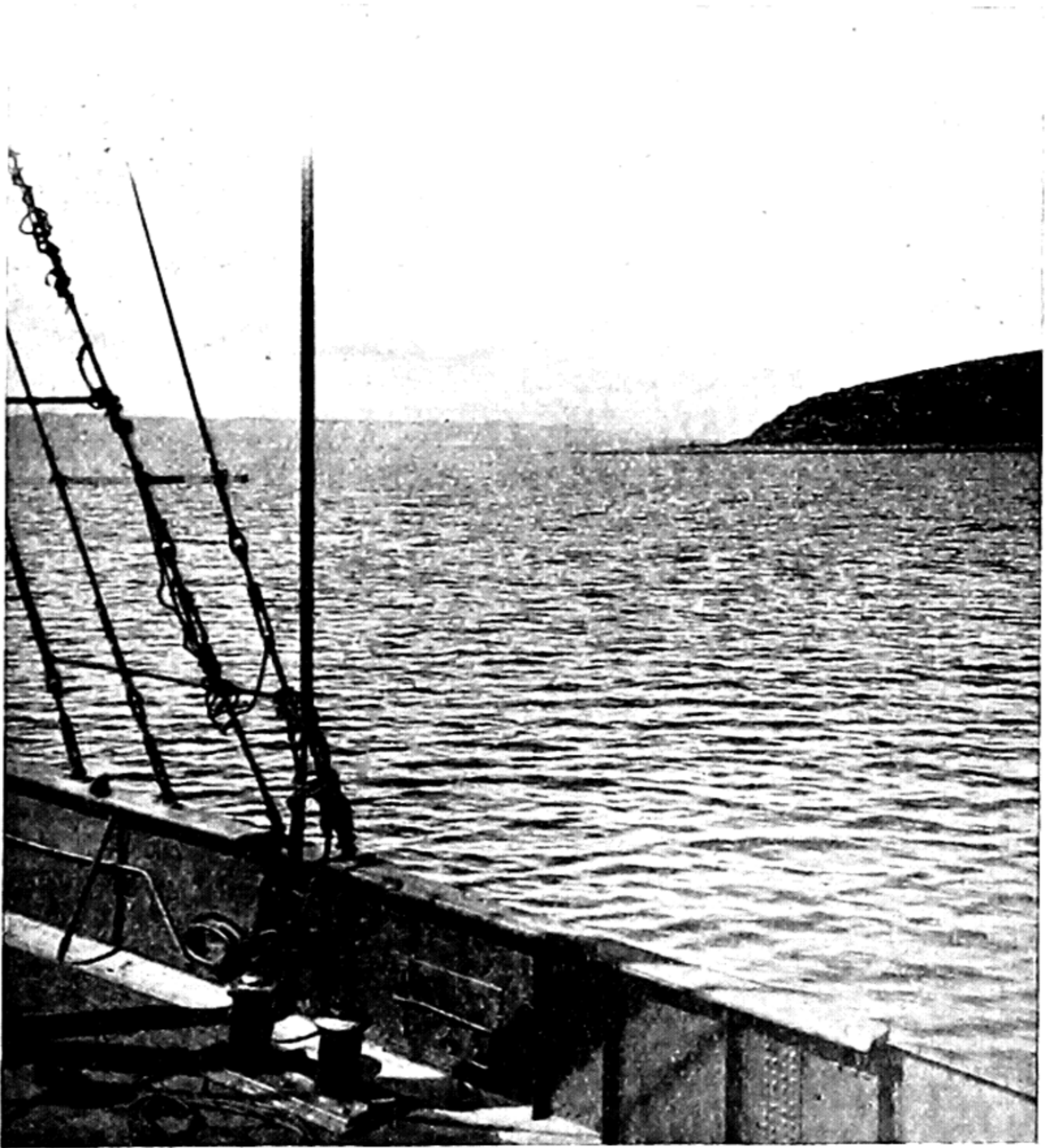
The three great rivers of South America are the Orinoco, the Amazon, and the La Plata. The watersheds between the Amazon and the La Plata are so low that a lake or swamp sometimes discharges into the one river and sometimes into the other, and in the rainy season these two great rivers are connected by their tributaries. The South American rivers have cut their beds into a long even slope, and, except far inland, they are not impeded by rapids or waterfalls. The rivers are thus navigable for a greater length than any other rivers of the world and form excellent waterways.

The *Orinoco*, in the north, is navigable for steamers for nearly a thousand miles. It rises in the high western region, receives numerous tributaries from Guiana and the Andes, and enters the sea by many mouths near the island of Trinidad.

The *Amazon*, though not the longest river in the world, discharges a greater volume of water than any other river. It is navigable without interruption for a distance of 2600 miles from its mouth, while it is estimated that 50,000 miles of navigable waterway are afforded by the main stream and its tributaries. Many of these tributaries, however, are impeded by falls and rapids. The main stream is south of the equator, which it reaches at its mouth. This great estuary has a powerful tidal bore which ascends for a distance of 400 miles, but the usual entrance for ships is by the Rio Para mouth.

The *La Plata* is formed by the Uruguay, the Parana, and the Paraguay. These rivers drain the southern Brazilian highlands and the Argentine plain, and discharge their waters into the estuary of the La Plata. The waterway formed by the Upper Paraguay and the Lower Parana is of great importance and likely to be

of great service to commerce, for it brings hot and temperate climates into direct communication. Its one drawback is the extreme shallowness of the estuary of the La Plata.



Lake Titicaca.

Other large rivers are the Magdalena in Colombia, the San Francisco in Brazil, and the Rio Negro in Argentina.

South America has few large lakes, Lake Titicaca being one of the most remarkable ; but the slopes of the southern Andes abound in smaller lakes, which are of glacial origin.

## Coast.

The coast-line of South America is exceedingly regular and is only three-quarters as long as that of Europe, whose area is little more than half as great. The regularity of the coast is so marked that the least line that could circumscribe its area would be only half the length of the coast-line. The east coast is generally lower than the west, and has the typical Atlantic structure, being bordered by plateaux. The estuaries, the most notable features on this coast, deepen steadily seaward. The west coast has the typical Pacific structure, with mountain lines parallel to the shore. On the west there are but few of the island groups which are so conspicuous on the Asiatic side of the Pacific. There are traces of island festoons between California and the Galapagos, while another may be represented by Juan Fernandez and St Felix off the coast of Chile. There is an archipelago off southern Chile, and this was produced by the submergence of the coast-lands under the sea. The fjords thus formed run far inland and give the coast a greater complexity. The island of Tierra del Fuego is separated from the mainland by a series of fjords forming the Strait of Magellan. The Falkland Islands, peopled mainly by British settlers, rise from the continental shelf to the east. The north coast is low and sandy, and, among the islands, Trinidad lies as a detached part of the continent off the east of Venezuela. This coast has two important openings, the Gulf of Darien in the west and the Gulf of Venezuela opening into the Lake of Maracaibo in the middle. The delta of the Orinoco forms a low and swampy coast, and this continues to be the character of the North Atlantic shore to the mouth of the Amazon. Beyond this the coast is bordered by a sandstone reef as far as 20° S.

## Climate and Rainfall.

South America does not experience great ranges of temperature. The climate is equable, the range vary-

ing from  $5^{\circ}$  to  $10^{\circ}$  in the north and south to about  $30^{\circ}$  in the Argentine. A large portion of South America is in the tropical zone and has a hot climate, while the portion south of the Tropic of Capricorn has a climate resembling that of the United States. As might be expected, the mountains cause different kinds of climate in each of these zones. For instance, in Ecuador, at the base of the mountains near the sea-level, the temperature is high throughout the year; higher up the mountains the climate is cooler; and higher still the temperature is so low that snow remains all through the year.

The winds of the highlands are the key to the rainfall of the continent. In the neighbourhood of the equator is the belt of calms, and north of this the north-east trade winds blow, while south of it is the region of south-east trade winds. Further south are the "horse latitudes," and then come the prevailing westerlies which blow across the south of the continent. A reference to the rainfall maps will show that heavy rains occur in the neighbourhood of the equator, where the air is constantly rising; the northern coast has abundant rain because the trade winds come over the ocean and are forced to rise in passing over the slopes; and the Brazilian highlands are also well watered by the south-east trade winds. South of the belt of calms, in the trade wind and horse latitude regions, the western slopes and valleys of the Andes are so arid that agriculture is impossible without irrigation. This arid condition is due to the influence of the mountains, which interfere with the trade winds, so that the prevailing winds are from the south and blow towards the equator, and thus do not liberate their moisture to form rain. Further south the influence of the prevailing westerlies is felt, and so the western side of the continent receives the rain, while the eastern part is dry. In Southern Chile and Patagonia there is a heavy rainfall, for, the land being colder than the winds which blow from the sea, the moisture is liberated

on the seaward face of the Andes. A reference to the rainfall maps will show that, each year, as the season changes, the belts of rainfall move northward and southward. On each side of the equator there is thus a belt where the rainfall varies with the season, being dry at one period of the year and well-watered at the opposite period. This change is brought about by the shifting of the wind belts.

### Plants and Animals.

The high temperature and great humidity of the warm rainy region favour a most luxuriant growth of plant life. The lowland basin of the Amazon is a dense tropical jungle, and much of this forest has never been penetrated. These widespread selvas of the Amazon are favourable to the growth of palms, mimosas, figs, and bamboos. The stems of these trees are twined by creepers, and out of the branches flourish the most gorgeous orchids. The llanos in the basin of the Orinoco produce tall grass and isolated trees, and the turf-clad pampas of the south support flocks of sheep and herds of cattle. In the desert regions are olives, tamarinds, and mimosas, and such drought-resisting plants as the cactus and the agave. South America is famous for its wealth of plants of economic value. Besides producing quinine from the cinchona tree and cocaine from the coca, the continent yields maté, cacao, potatoes, tapioca, rice, sago, arrowroot, maize, yams, tobacco, india-rubber, gums, and wax. Cotton and coffee are also extensively cultivated, and ornamental and dye-woods are largely exported.

South America has some wild animals which are peculiar to the continent, and the puma, jaguar, tapir, and llama are the counterparts of the lion, tiger, elephant, and camel of the Old World. The animals of South America are, however, poor and scanty in comparison with the rich vegetation. The alpaca, the vicuña, and the llama of Peru are among the most useful of South American animals, and the latter is the

only one that has been domesticated and used for the purposes of transport. The tapir, the peccary, the jaguar, and the puma live in the forests, with countless monkeys in the trees. Perhaps the sloths and ant-eaters are the most typical animals. The boa-constrictor, or anaconda, and alligator are common, and humming-birds are remarkable and numerous. The rhea, or South American ostrich, lives on the pampas,



A glacier in the Andes.

and opossums are also found. Most of the useful animals have been introduced: horses abound on the llanos and pampas, and cattle and sheep are largely reared on the southern grass-lands.

### Minerals.

The great mineral wealth of South America, chiefly associated with the Andes, attracted the Spanish invaders. The silver mines of Potosi, worked for

centuries, are not yet exhausted and have probably yielded more silver than any other district in the world. Gold is found in the older rocks, both in Guiana and the Andes, and the gold mines of the former area were known as El Dorado to the early voyagers. Diamonds are found in Brazil, and iron, copper, lead, tin, and other metals are produced in various parts. The dry climate of northern Chile is favourable to the immense deposits of nitrate so largely exported.

### **People, Distribution of Population, Language and Religion.**

When Columbus discovered the South American mainland in 1498, it was inhabited by a race of Indians, many of whom were savages. But in Peru, Bolivia, and Ecuador there were tribes of Indians under control of the Incas, who had an organised government and had reached the early stages of civilisation. The Incas tilled the soil, cultivated the potato, corn, and cotton, and domesticated the llama and alpaca for their wool and for purposes of transport. Their empire, the capital of which was Cuzco, extended for more than 2000 miles along the Andes and inland to the forests of the Amazon. The Spaniards, encouraged by the abundant stores of gold and silver, seized most of South America, with the exception of Brazil, which was settled by the Portuguese. The Spaniards intermarried with the Indians, so that the present inhabitants of South America are largely of mixed blood, and this explains the reason of the unsettled governments of some of the South American states. Spain maintained her hold of South America for more than 300 years ; but in the early years of the nineteenth century the conquest of Spain by Napoleon gave the Spanish colonies an opportunity to gain their independence. Brazil also secured its independence from Portugal in 1822, and the empire then founded lasted till the formation of a republic in 1889. The three colonies of Guiana are now the only parts of the mainland of South America held by European powers. During

recent years there has been a great immigration of Europeans, mostly Italians, British, and Germans, of whom the last are most numerous in Brazil.

The population of South America is estimated at 45,000,000, giving a density of rather more than six persons to the square mile. The white population is largely Spanish in descent, but there are Portuguese also, and there has been a large influx of Italians and Germans. There are about 9,000,000 pure Indians, and in Brazil there is a great mass of negroes. The Spanish language is widely prevalent, but Portuguese is spoken in Brazil, English in the British colonies, and French and Dutch in parts of Guiana. The coastal lands and the river valleys have the largest population, while the barren deserts of the south and the tropical interior are the most sparsely populated.

The prevailing religion of the whole continent is Roman Catholic, and the social and public life of the people is coloured by Spanish and Portuguese ideas.

### **Communications and Progress.**

Considering its great natural resources, the commerce of South America is backward. Communication, except by the finest waterways in the world, is poorly developed. The railways are comparatively unimportant, and at present the Argentine Republic has the longest railway system. The greater portion of the immense capital needed for the railways was raised in Britain.

With regard to its present division into various states, it may be noted that none of the countries of South America, except Chile, has been separated by nature from its neighbours; but it is to historical events that they owe their existing boundaries. European immigrants are pouring into the southern states and there are vast possibilities of change, for the commercial and financial movements of the world are likely to be affected by the future development of South America.

The late Lord Bryce pertinently remarked, "South America is bounded at its northern end by an isthmus and at its southern by a strait. They are the two gateways by which the western side of the continent, cut off from the eastern and central portions by a long and lofty mountain range, can be approached from the Atlantic....In old Spanish days all the commerce of the west coast passed over the Isthmus, but when the days of steam navigation arrived, that commerce passed through Magellan's Strait. Now the Isthmus itself is to be turned into a strait and will be a channel for the sea-borne trade, the main gateway to the west."

## Colombia. *Sup.*

### Position and Size.

Colombia, named after Columbus, occupies the north-western portion of the continent. The present republic of Panama was included in this country till 1903, when it secured its independence. The boundaries are not definitely fixed, and the present area is estimated at 440,846 square miles.

### Surface and Rivers.

The surface is very varied, with lofty mountains in the west and vast plains in the east. The Andes region has four mountain chains, and the highest of the many summits is Tolima (18,300 feet) in the Central Cordillera. This, with others in the same range, is volcanic. The plains, or llanos, are savannas in the north and selvas, or extensive forests, in the south.

The two principal rivers, the Magdalena and its tributary the Cauca, descend from the Central Cordillera and flow north into the Caribbean Sea. The country has also some tributaries of the Amazon and the Orinoco. The great channel of communication

is the Magdalena, which is navigable for steamers to Honda, but owing to a bar at its mouth is connected by rail with the seaports of Cartagena and Savanilla.

### Climate and Productions.

The climate is generally tropical, but in the west, owing to the great elevation, it has many varieties, ranging from the hot region of the north-west and the great plains of the east to the bleak, stormy region of the Eastern Cordillera at an elevation of over 10,000 feet. In the course of one day's journey it would be possible for a traveller to experience in this country all the climates of the world. In the north and east the rainy seasons are from April to June and from September to December, separated by two dry seasons. Elsewhere the rainy season is more extended, and the result is seen in the difference between the savannas in the plain and the forests in the south.

In the hot region extending to a height of 3000 feet, rice, cacao, sugar-cane, bananas, yams, tobacco, and dye-woods are the chief productions. Rice is so generally eaten by the people that a deficiency of this commodity is made up for by its import. The temperate region, extending to a height of about 8500 feet, produces the coffee plant, the fig, and the cinchona tree. In the cold region, up to a limit of 10,000 feet, wheat, and vegetables are grown. Above 10,000 feet is the Paramos, a bleak region with scanty vegetation, ending in lichens at the snow-line.

The animals are very varied and include the monkey, puma, tapir, armadillo, sloth, and ant-eater. The birds include condors, humming-birds, and parrots; and among reptiles, alligators swarm in the rivers, and tortoises and great toads are numerous. Insect life is very rich; large and beautiful butterflies and swarms of ants, locusts, and mosquitoes are typical of the country.

Gold and silver are plentiful, and the country is generally rich in minerals. The mines have been little

worked owing to the absence of roads, but there is some mining in copper, iron, salt, and coal.

### People, Industries, and Trade.

The people, who number about five and a half millions, are mainly descended from the numerous Indian tribes, and they have adopted the language, religion, and habits of the Spanish conquerors. The pure whites form perhaps one-fifth of the whole population, which is mainly gathered in the seaports, on the plains and mountains of the Eastern and Central Cordilleras, and the upper Cauca basin. Owing to the unstable government and the civil wars, the progress of the country has been retarded. Colombia secured its independence of Spain after a struggle lasting from 1810 to 1822.

Besides the mining, industry is little developed and is mainly confined to articles of home use. The railways extend to 740 miles ; there are few good roads and bridges, and mule tracks and foot-paths are the chief means of transit and communication. The foreign trade is mainly with Great Britain and the United States. The imports are mostly food-stuffs, textiles, and machinery ; the exports include coffee, gold, silver, tobacco, cotton, timber, hides, and wool.

### Towns.

The only large town is *Bogota*, the capital. It is within five degrees of the equator, and owing to its elevation of 8000 feet above sea-level it enjoys a healthy climate, with a temperature like that of perpetual spring. The principal harbours are the strongly fortified *Cartagena*, and *Barranquilla* on the Magdalena, which is the chief artery of trade.

## Ecuador.

### Position and Extent.

Ecuador, a republic almost entirely south of the equator, owes its name to the fact that Quito, its capital, is almost under that line. Its boundaries, except on the coast side, have not been determined; but its area is estimated at 116,000 square miles, or about that of the British Isles.

### Surface.

The great geographical interest of Ecuador lies in the grand active and extinct volcanoes. The country has three very distinct regions—the coast, the Andes, and the Montana, or highland forests of the Amazon. The Andes form two chains of mountains connected by mountain knots, which divide the plateau between them into ten basins. The drainage is generally to the Pacific, but in some places rivers find their way to the eastern chain and join the Amazon. Among the magnificent mountain peaks are Cotopaxi (19,613 feet), the highest active volcano in the world, Antisana, and Cayambe, both over 19,000 feet. Chimborazo (20,498 feet), no longer active, is the loftiest peak. The feature of the coast region is the Gulf of Guayaquil at the extreme south, and the river system of Guayas converges to form a large estuary on the north side. The Galapagos Islands in the Pacific belong to Ecuador.

### Climate and Productions.

The coastal district has an unhealthy climate due to heat and moisture, and the eastern slopes are subject to heavy rains brought by the trade winds from the plain of the Amazon. Quito, at an elevation of over 9000 feet, has a mean annual temperature of about 55°. There, and on the western slopes, is a hot season from December to May, and March is the wettest month.

In the northern part of the coast region there are magnificent forests and abundance of india-rubber; and on the western slopes of the mountains there are many varieties of flowering shrubs. The eastern forests abound in graceful palms, enormous trees yielding valuable woods, and the famous trees of cinchona. Wheat and barley are grown in the Andean basins, cacao is largely produced, and cattle are raised in some districts.

There are no manufactures of importance; Panama hats are the chief manufactured export. The other exports include cacao, cinchona, sarsaparilla, india-rubber, coffee, hides, and sugar.

In mineral wealth, Ecuador is amongst the poorest of the South American states; but gold is worked, and silver, quicksilver, copper, iron, and lead are found.

## People and History.

Ecuador, with Peru and Bolivia, occupies the territory which once formed the empire of the Incas. The population is scanty and does not exceed 1,500,000 people, of whom at least two-thirds are Indians. The remainder consists of creoles, negroes, mulattoes, and mixed races who speak Spanish. Almost all the people are Roman Catholics and education is in a backward state. The Incas conquered the Indians in 1450; the Spaniards arrived in 1534 and remained in possession till 1822, when Ecuador, as part of Colombia, gained its independence. In 1830 it became the Republic of Ecuador, and from that year onwards it has passed through many violent political changes.

## Communications and Towns.

Commerce is hindered by want of roads, and there are only 365 miles of railroad. A short line connects Quito, the capital, with Guayaquil, its seaport. There is steam and boat communication on the Guayas and its tributaries. The roads in the interior are mere

tracks, and over the mountain-passes the llama is used as a beast of burden. The one highway is from Quito towards Guayaquil for a distance of 115 miles.



Guayaquil: Market wharf.

○ Peru. *gwp*

### Position and Extent.

Peru is a republic to the south of Ecuador with an area of about 722,461 square miles. Before the war with Chile in 1879 the country was much larger and extended for 1400 miles along the Pacific.

### Surface.

Peru is one of the most favoured countries of the world, for it has every variety of climate and the

greatest diversity of soils. It is composed of three zones or regions—the coast, the Sierra, and the Montana. The coast region, from the Andes to the Pacific, is a sandy desert crossed by many rivers. The Sierra, or region of the Andes, consists of three ranges and is cut through by several rivers. Some of the peaks in these lofty ranges rise to 19,000 feet. On one of the tablelands lies Lake Titicaca, at a height of 12,545 feet, the largest lake in South America. The Montana is the region on the eastern slopes of the Andes, containing the headwaters of the Amazon and great tropical forests.

### **Climate and Productions.**

There are variations in climate due to altitude and also great differences in rainfall. There is an absence of rain on the coast, which is caused by the Andes abstracting all the moisture from the trade winds. Dry winds consequently prevail on the western mountain slopes to the coast. So little rain falls in south-western Peru that in some parts there is an average of only one shower in seven years.

Peru has an abundance of natural resources, and the coast region produces cotton, sugar, tobacco, and rice. The Andes yield silver, copper, gold, and coal, while the vegetable products of this region include maize and potatoes, and in the eastern slopes cacao, coffee, tobacco, and coca. Among the wild products of Peru are the cinchona bark and india-rubber, and the yield of wool from the alpacas and the vicuñas is a source of immense wealth.

### **People and History.**

The people, who number about 4,500,000, are mainly Indians, creoles of Spanish descent, negroes, and Chinese. The empire of the Incas, with its capital at Cuzco, had flourished for upwards of four centuries before the arrival of Pizarro in 1532. Spanish administration lasted till 1824, when Peru gained its independence. Since that date Peru has had periods of peace

and warfare, the last war with Chile in 1879 being disastrous, as it led to a considerable loss of territory.

### Communications and Towns.

There is an absence of good roads, but railways have a length of 1724 miles and are increasing. Among those already in existence are two of the most remarkable in the world. One of these is the Lima-Oroya railway, which goes over the Andes at a height of 15,600 feet. Another line runs over the Andes from Mollendo to Puno, the summit being crossed in a cutting 14,660 feet above the sea. The tributaries of the Amazon in Peru are navigable by steamers, and there are also steamers on Lake Titicaca.

The capital of the country is *Lima*, an unhealthy city on the coast strip. It has the largest population (100,000) of any town in Peru, and is joined by railway to the port of *Callao* with a mercantile dockyard. *Arequipa*, founded by Pizarro in 1536, is situated 7260 feet above sea-level and in the midst of a fertile plain. The magnificent volcanic cone of Misti (20,000 feet) is behind the town. *Cuzco*, the ancient capital of the Incas, is on a tableland surrounded by mountains 11,380 feet above the level of the sea. Here is the Inca citadel, consisting of three lines of massive walls and built of enormous stones. *Truxillo*, to the north of Lima, *Puno*, on Lake Titicaca, *Pasco*, the centre of silver mining, and *Ayacucho*, named after the battle which secured the independence of Peru in 1824, are other towns of note.

## Bolivia.

### Position and Extent.

Bolivia is a republic, now entirely inland, occupying the broadest part of the tableland of the Andes. The area is estimated at 514,000 square miles, or more than four times that of the British Isles.

## Surface.

Bolivia contains the greater part of the loftiest and most mountainous district of South America. The peaks of Sorata and Illimani are just under 22,000 feet, and the plateau between the two ranges of the Andes has an average height of 12,000 feet. The great plateau has Lake Titicaca and many well-watered valleys in the north, but in the southern end it is chiefly a desert. The most important rivers are those flowing from the eastern slopes of the Andes; these are the feeders of the Madeira, one of the great tributaries of the Amazon.

## Climate and Productions.

Although situated entirely within the tropics, Bolivia has a wide range of climate and productions. In the higher regions the climate is cold and dry and the vegetation scanty. At La Paz the mean annual temperature is 50°. The valleys of the eastern terraces have a temperate climate; while the eastern plain has numerous streams, rich forests of valuable trees in the north, and immense savannas in the south. Coffee, rice, cacao, cotton, and the valuable cinchona are cultivated, and wool is obtained from the alpaca and vicuña. Mining, however, is more important than agriculture, and gold, silver, copper, and tin have long been produced. The silver mines of Potosi are world-famous, and, although worked since 1545, the richest mine, Huanchaca, still yields large quantities of silver ore.

## People and History.

Bolivia took its name from General Bolivar, who achieved its liberation from Spain in 1824. The population is estimated at 2,900,000, fully half of whom are Indians, the remainder being Spaniards and negroes. The Spaniards conquered the Indians in 1538 and continued to rule the country till it gained its freedom.

As a result of war with Chile in 1879–83, Bolivia lost its coast provinces.

### Communications and Towns.

Owing to the land-locked position of the country, the foreign trade of Bolivia labours under great disadvantages. There is a service by steamers across Lake Titicaca, and railways have reached Bolivia from Chile,



A street in La Paz.

Peru, and Argentina. The rivers are impeded by reptiles and are almost useless for navigation. Goods are transported by trains or mules, alpacas, or llamas. *La Paz*, the chief city of Bolivia, is situated about 12,000 feet above sea-level, and *Sucre*, formerly known as *Chuquisaca*, is the nominal capital. *Oruro* is the centre of a silver and tin-mining industry, and *Cochabamba* is the most agreeable place of residence in Bolivia.

Chile. V. G. W. P.

### Position and Extent.

Chile is a maritime state possessing the whole of the western coast-strip south of Peru, together with the islands that fringe the coast, including part of Tierra del Fuego. Although it holds both sides of the straits of Magellan, except in the extreme east, that waterway is considered neutral. The area of Chile is estimated at 290,000 square miles. It is nearly 3000 miles long, nowhere more than 130 miles wide, and often narrower.

### Surface.

The Andes extend in two parallel lines throughout nearly the whole length of the country, and between these two ranges there is a central valley or tableland. The average height of the Chilean Andes is about 8000 feet and the highest peak is Aconcagua (23,000 feet). There are many volcanic peaks, mostly extinct, and the region is subject to earthquakes. From the structure of the country, all the rivers are short and useless for navigation. Natural harbours are scarce along the coast, except in the southern archipelago, where they are numerous but small.

### Climate and Productions.

In Chile there are all climates, though, on the whole, the climate is temperate and the air is invigorating. In the north, where the winds blow away from the coast, rain is the exception, while southwards from 36° rain falls on most days, especially in winter. The prevailing coast winds are from the west and south-west; and the climate of the central valley and of the coast between 32° and 36° is exceedingly pleasant and healthy, for the slope of the land secures good drainage and prevents the formation of marshes.

The greater portion of Chile is covered by lofty mountains, which in parts are treeless and arid. In the north the Atacama desert is useless for pasture and agriculture, and in the south there are wide forests, yielding timber that is heavy rather than firm and hard. There are no noxious beasts, no mosquitoes, and no poisonous snakes. The central region is the most fertile and produces wheat, barley, and southern fruits. Copper and silver are abundant, especially to the south of Copiapo, and guano and nitrate of soda are obtained in large quantities in the northern portion.

### People and History.

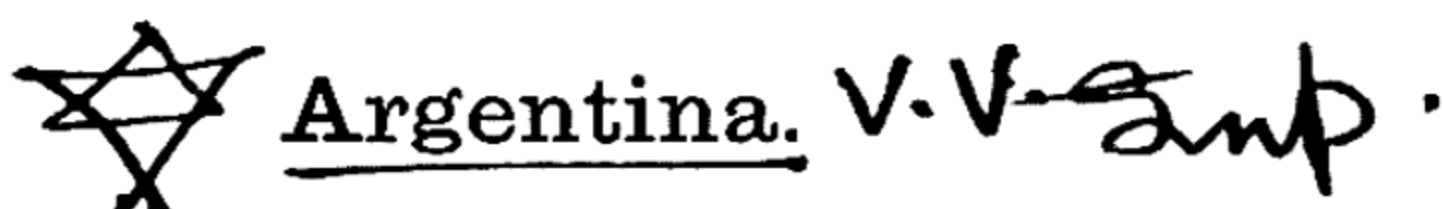
The natives of Chile are mainly Araucanian Indians, and the population has a majority of whites. The estimated population is  $3\frac{3}{4}$  millions, which includes Europeans of many nationalities. The educated classes are almost entirely of Spanish origin, having preserved the language and religion of Spain. The domination of Spain was lost in 1817, and since that year Chile has been a republic, showing more stability than any other South American state. The war in 1879 between Chile and Peru and Bolivia ended in the addition to Chile of some adjoining territory.

### Communications, Trade, and Towns.

British steamers carry on regular services with Chile via the Strait of Magellan. Sailing vessels prefer the less dangerous route round Cape Horn. There is trade from Argentina across the Andes, especially over the Portillo and Uspallata Passes, nearly 14,000 feet high.

Santiago is connected with Valparaiso and Concepcion by a railway which extends to Valdivia. The capital is *Santiago*, a healthy, well-situated, modern town, with wide streets and the State University. Its port, *Valparaiso*, is the chief port on the west coast of South America. Its harbour is well-sheltered and

forms the terminus for some important lines of European steamers. *Iquique* is the most important port for the export of nitrates. *Concepcion*, on the Biobio, the largest river in Chile, is the commercial centre for a large district. *Valdivia* on the west and *Punta Arenas* on the Strait of Magellan are two ports of some importance. *Coquimbo* on the west has a fairly good harbour and thrives on the trade which comes from the neighbouring mines. *Telcahuano* has the finest natural harbour in Central Chile. It is the principal stronghold of the country.



### Position and Extent.

The Argentine Republic, the second largest state in South America, has an area of 1,153,000 square miles, nearly ten times as great as that of the British Isles; with the exception of Paraguay and Uruguay, it occupies the whole of South America south of Brazil and east of Chile. It also embraces the eastern portion of Tierra del Fuego.

### Surface.

The immense rocky mass of the Andes covers a large area of Argentina, and the Andean provinces are rugged and broken. The greater part of the country consists of vast plains, or pampas. The northern region (the Chaco) is in part densely wooded, but most of the pampas country is open, treeless pasture. In the Patagonian region there are extensive districts of stone and shingle with saline ponds or lakes.

The chief rivers are the Parana and Uruguay, which unite to form the La Plata. Further north the Parana is known as the Paraguay. Among the other rivers flowing from the Andes are the San Juan, Rio Negro, Colorado, and Chubut. There are some beautiful lakes

along the base of the Andes—Lake Nahuel-huapi, the source of the Rio Negro, is one of the most noteworthy.

### **Climate and Productions.**

The northern portion to about  $32^{\circ}$  S. has a tropical climate, while the southern territories have a bleak, windy, and disagreeable climate. The greater portion of the country between  $32^{\circ}$  and  $42^{\circ}$  S. has a temperate, equable, healthy climate. The mountain zone has a variable climate, depending upon the seasons and the difference of altitude and latitude.

Argentina is a great and progressive agricultural state, and produces a variety of crops such as wheat, maize, flax, tobacco, sugar, and grapes. Stock-raising is of considerable importance; large herds of cattle and immense flocks of sheep are reared on ranches of wide extent. In 1920 there were 30,000,000 cattle, 80,000,000 sheep, and 9,500,000 horses. A valuable product of the north is maté, or Paraguay tea.

### **People and History.**

Argentina is the most progressive and best governed of the South American states. The people, who number nearly 8 millions, are largely of Spanish descent, but there are a few Indians, many Italians, and numerous French, English, and Germans. There is a constant influx of Europeans, and the government is based upon liberal principles. The country gained its independence in 1810, after being under Spanish rule since the sixteenth century.

### **Communications and Trade.**

The natural facilities for inland commerce yielded by the Paraguay and lower Parana are considerable. The railway system of 22,378 miles is the most complete in South America. This is due largely to the level surface of the eastern and central plains. The foreign

trade is large and mainly with Great Britain, the United States, Italy, Spain, and France. Animal products of various kinds, such as wool, frozen mutton, hides, fresh beef, and tallow make up a large portion of the whole value. The wheat export is very large, Great Britain taking more than one-half the crop.



Buenos Aires: the docks.

## Towns.

*Buenos Aires*, which stands on the La Plata, is the capital and chief seaport. The construction of the harbour works on this shallow shore was a difficult engineering feat. Formerly large vessels had to anchor 10 miles off, but now there is a depth of over 20 feet in the docks for steamers. It is a handsome and healthy town, with many fine public buildings. The streets are well kept, and everything is fresh and bright. Its population of over 1,600,000 is cosmopolitan in character, and nearly all the languages of the world are spoken.

Buenos Aires is the railway centre and has the greater part of the trade of Argentina. } *Rosario*, an important city and railway centre, is a river port on the Parana. It is now the leading wheat port. *Cordoba* is supported by agriculture and mining. It is irregularly built, and has a university, a cathedral, and the national observatory. Other towns of importance are *La Plata*, *Mendoza*, *San Juan*, and *Tucuman*.

## Tierra del Fuego.

This territory, of which the most easterly portion belongs to Argentina, is flat in the north, forming as it does the southern continuation of the Argentine plain. Some parts are arid, but most of it is good pasture land, excellent for sheep. Only in the far south are there mountains. Some of the Patagonian aborigines—the Ona tribe—who live in the recesses of the wooded mountains, are of great strength and courage, and are clothed only with a guanaco skin.

## The Falkland Islands.

These islands, situated 250 miles east of the Strait of Magellan in the South Atlantic Ocean, belong to Great Britain. The group consists of East Falkland and West Falkland, with about 100 small islands, besides the dependency of South Georgia. The shores are deeply indented and contain some good harbours, so that the islands are visited by vessels on the outward and inward voyages. The climate is healthy, although somewhat damp and foggy. The capital is *Stanley*, on East Falkland. The Falklands were discovered by Davis in 1592, but were not definitely settled by the British till 1833, since which time they have formed a Crown Colony. At present there are about 2300 inhabitants,

nearly all of British origin, including a good many Scots, brought hither as shepherds. The colony is now one enormous sheep farm, and lives off the wool and skins it sends home and the living sheep it exports for breeding purposes to Punta Arenas. Of agriculture there is practically none, for the climate permits nothing to ripen except potatoes and turnips, with a few gooseberries and currants.

The Falkland Islands were rendered famous in 1914 by a decisive naval battle off the coasts between British and German fleets. The latter was totally defeated.

## ○ Uruguay. *Urúguay*.

### Position, Extent, and Surface.

Uruguay, lying between the La Plata and Brazil, is the smallest of the South American republics; its area is 72,210 square miles. The Atlantic washes its shores for 120 miles, and the Plata and Uruguay rivers for 600 miles, while the Rio Negro flows through the middle portion. Along the coast the country is covered with good pasture lands, and in the interior the land rises to an elevation of less than 2000 feet. The Uruguay, from which the country takes its name, rises in Brazil and is about 1000 miles long.

### Climate and Productions.

The climate is similar to that of Argentina, and is generally mild and healthy. The rich pasture lands are well adapted for the rearing of sheep and cattle, and the breeding and slaughtering of cattle are the chief occupations of the people. This industry has made the small towns of Fray Bentos and Paysandu well known throughout Europe. Extracts of meat, ox tongues, hides, tallow, horns, and skins are the chief articles of export.

## People and Towns.

Uruguay is one of the worst governed states of the world. It gained its independence in 1814, and since that date it has been shamefully misgoverned and plundered. The majority of the people, who number over one million, are native born, but there are many Europeans, especially Italians. *Montevideo*, the capital, stands at the extremity of a semi-circular bay. It has an excellent harbour and a population of over 300,000. *San José*, *Paysandu*, and *Fray Bentos* are centres of trade, although their population is small.

## Paraguay. *Simp.*

### Position, Extent, and Surface.

Paraguay is an inland state, lying on both sides of the Paraguay, and bounded by Brazil, Bolivia, and Argentina. Its area is about 165,000 square miles. The northern portion is undulating, and there are mountains in the north-east and north-west. The southern portion is one of the most fertile districts of South America, consisting of well-wooded hills, wide savannas, and rich alluvial plains. The Parana and Paraguay, both rising in Brazil, are the chief physical features of the country; the former is by far the larger, but is only navigable for 250 miles, while the latter can be ascended by light vessels for 1200 miles from the sea.

### Climate and Resources.

The climate is hot and dry, and in summer the temperature rises to 100° F. The mean winter temperature is about 65° F. The natural productions are very varied: its forests yield timber; medicinal plants, dye-woods, gums, cotton, indigo, and india-rubber are produced in abundance; and the sugar-cane, oranges,

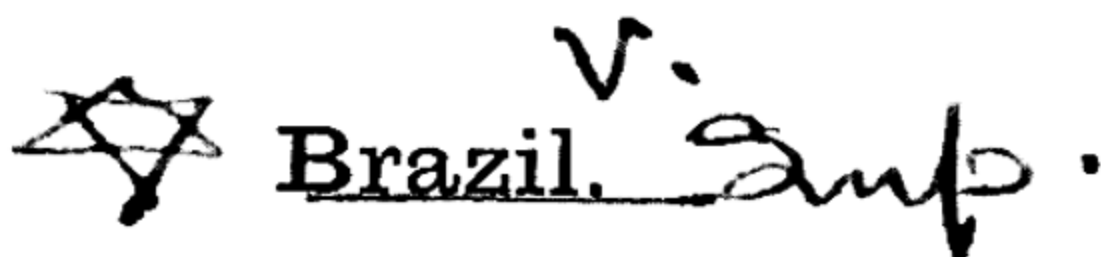
tobacco, rice, maize, and yerba-maté, or Paraguay tea, are cultivated.

## People and History.

Paraguay was discovered in 1515, settled by the Spaniards in 1535, and ruled by them till 1810, when it gained its independence and became a republic. The population is about 1,000,000 and consists chiefly of native Indians.

## Towns.

*Asuncion*, the capital, on the left bank of the Paraguay, is connected by railway with *Villa Rica*, a town of less importance, but the second in the republic.



## Position and Extent.

Brazil is the largest state in South America, having an area of 3,275,510 square miles. It is larger than the United States and rather smaller than Europe. The greater portion of Brazil is within the tropics and it borders on all the South American states except Ecuador and Chile. In shape it is triangular, occupying the eastern angle of the continent. Its coast-line is considerable. The interior is in great part unexplored and unsettled.

## Surface.

Ranges of mountains, which cut off the Atlantic moisture from the region behind, are close to the coast, which trends in a south-easterly direction. The most eastern of these ranges is a barrier to communication with the interior, for it turns nearly all the great rivers inland to find outlets through the Amazon and La Plata. This region is almost entirely low tablelands (campos) with a sterile soil. North of  $20^{\circ}$  S. these campos are

only fit for pasture. ' The interior of the country is a high plateau, ridged by mountains 1000 to 3000 feet and cut by large rivers. In the north and west are the valleys of the Amazon and Paraguay, which comprise large areas of heavily-wooded swamps and food-plains.

Brazil has three great river-systems—the Amazon, La Plata, and San Francisco. The *Amazon* and its tributaries drain fully one half of the country; east of the Madeira these tributaries are tableland rivers and not of much use for navigation; west of the Madeira they are lowland rivers, slow-flowing, and navigable. The *La Plata*, through its three branches—the Paraguay, Parana, and Uruguay—drains one-fifth of the country. The first of these is a lowland, navigable river, while the others are tableland rivers with many obstructions in their courses. The *San Francisco* is a tableland river draining Brazil in the north-east, and breaking through the maritime mountains to the Atlantic Ocean.

### Climate and Productions.

As the greater portion of Brazil is within the tropics, the climate is generally of the characteristic tropical type, except where it is modified by altitude. The lowlands of the Amazon and a great part of the coast are hot, humid, and unhealthy; while the tablelands and such parts of the coast as are swept by the trade winds are temperate and healthy. The rainfall of the Amazon basin is excessive, and this constant moisture combined with the high temperature produces the extensive tropical forests with the most luxuriant and varied vegetation.

These vast forests contain hundreds of species of trees festooned and draped by climbing plants, lianas, and orchids. Rosewood and Brazil wood supply valuable timber, and tropical fruits are abundant. There are many fertile districts in the south, and there, as well as in other parts, coffee (the most valuable of Brazilian exports), sugar, tobacco, cotton, and cacao are produced. India-rubber, collected on the Amazon

from wild trees, is of great importance, and, after coffee, is the most important of the productions of Brazil.

It is worth noting that the railway system has been largely developed to provide communication between the plantations and the seaports. São Paulo is the great coffee-producing state and Rio Janeiro is the principal outlet for this region. Gold and diamonds are found, but the present production is not large.

## People and History.

The population is estimated at 27 millions. Negroes are numerous and Indians are found in the interior. The white people are mostly of Portuguese descent, and Brazil is the only state in South America where Portuguese is the official language. Brazil was discovered by Pinzon in 1500 and settled by the Portuguese in the same year. It became a kingdom in 1815, an empire in 1822, and a republic in 1888, in which year the Emperor Dom Pedro was expelled. The United States of Brazil have a constitution similar to that of the United States of America.

## Trade and Towns.

The industries of Brazil are chiefly concerned with agriculture, mining, and forest products. Stock-raising is not so important as in the neighbouring states, and the mining industries have declined. As mentioned above, the chief railways are in the coffee region, but the length of railway is little compared with the vast extent of the country. Immigrants, chiefly Italians, Spaniards, and Portuguese, are arriving in thousands, of whom a very large number are subsidised by the Brazilian government. The foreign trade of Brazil is chiefly with Great Britain, the United States, Portugal, Italy, and France.

*Rio Janeiro* is the capital and chief seaport, on an admirable natural harbour, and is the chief outlet for the coffee trade. It has fine botanic gardens and

an observatory, and is famous for its tree-planted avenues. The town, however, is unhealthy. *Bahia*, the second port, and *Pernambuco* are engaged in the sugar, cotton, and tobacco trade. *Para* and *Maranhão* are seaports of the region yielding rubber, dyewoods, and other forest products. *Santos* is another coffee port, and *Rio Grande do Sul* and *Porto Alegre* are the



Rio Janeiro.

ports of the temperate region, exporting animal products, such as hides, etc.

## The Guianas.

### Position, Divisions and Extent.

The Guianas lie north of Brazil and east of Venezuela and consist of three divisions, known respectively as British, Dutch, and French Guiana. *British Guiana*

has an area of 90,500 square miles ; *Dutch Guiana* of 46,000 square miles ; and *French Guiana* of 30,500 square miles.

## British Guiana.

British Guiana includes the settlements of Demerara, Essequibo, and Berbice. The boundaries have been definitely determined by the awards of the arbitrators in the Venezuelan-British Guiana case, and the estimated area is about the same as that of Great Britain.

### Surface.

The greater part of the coast for a distance of about five miles inland has been drained and is the only part of the colony under cultivation. Beyond this region there are reefs of white quartz sand, which are succeeded by a rocky, hilly country with dense forests. There are three ranges of mountains in the west, the highest peak, Roraima, reaching 8740 feet. The more important rivers are the Corentyne, Berbice, Demerara, and Essequibo, all flowing north into the Atlantic. The Essequibo is over 600 miles long but is obstructed by rapids 50 miles from its mouth.

### Climate and Productions.

From the country's position between 1° and 9° N. lat., the climate is very hot, and owing to the heavy rainfall, which ranges from 75 to 140 inches, it is moist. The climate, however, is not unhealthy, as there are always sea-breezes on the coast to modify the temperature. The seasons are divided into wet and dry, the two dry seasons lasting from the middle of February to the end of April, and from the middle of August to the end of November.

The forests which cover so much of the interior are interesting from the luxuriant character of their

vegetation and the beauty and variety of their animal life. Alligators and immense fish are found in the rivers; and in the Berbice river the *Victoria Regia* water-lily flourishes. The most important production is sugar, and in connection with its growth and manufacture there is much work for the people. Very little of Guiana is cultivated, but cotton, coffee, cacao, and rice flourish. Gold-mining has been attempted, but without much success. The chief trade is with Great Britain and the United States, and sugar, rum, molasses, and rice are the chief exports. The sugar trade has decreased in recent years, owing to the bounty system on beet-sugar in European countries.

### People and History.

The inhabitants, who number about 300,000, are of various races. There are aboriginal Indians, negroes, and Chinese, while the Europeans are mainly British and Portuguese. This colony, originally settled by the Dutch in the early 17th century, fell into the hands of Britain in 1781, but was lost to the French in the following year. In 1796, however, it was recaptured by Britain, given up at the Peace of Amiens in 1802, again captured in 1803, and finally ceded to Britain at the Peace of Paris in 1815. The government is in the hands of a Governor, appointed by the Crown, and two Councils.

### Towns.

*Georgetown*, the capital, having a frontage also to the sea, is on the Demerara. It is below high-water mark and is drained by canals and protected from inundation by a stone wall over a mile long. The streets and gardens of Georgetown are planted with palms and other trees, which give the city a pleasant appearance, notwithstanding its flatness. *New Amsterdam* is the chief town of Berbice, and the only other port of value.

## Dutch Guiana.

This country, also known as Surinam, is between British and French Guiana, the river Corentyne separating it from the former, and the Marowynne from the latter. The surface, forests, climate, and rainfall are almost the same as those of British Guiana. The white people are chiefly Dutch; and there are native Indians, and "bush niggers," the descendants of run-away slaves. The colony was ceded to the Dutch in 1667 in exchange for what is now New York. The chief product was sugar, but that has gone out of cultivation and has been to some extent replaced by cacao, coffee, and bananas. The capital is *Paramaribo*.

## French Guiana.

French Guiana is generally known as Cayenne, and, unlike the other Guianas, it has elevated land along the coast.

The present colony, established in 1664, has been used as a penal settlement since the French Revolution. The chief exports are cocoa, gold, woods, and hides. *Cayenne*, the capital of the colony, stands on a rocky promontory.

## Venezuela.

### Position and Extent.

Venezuela is a northern republic of South America, on the Caribbean Sea, and consists chiefly of the basin of the Orinoco. Its boundaries on the side of Colombia and Brazil have not been finally delimited, but the boundary dispute with Guiana was settled in 1899. The area is variously estimated, but is probably 398,504 square miles.

## Surface.

In the west and north there are mountains and valleys ; in the south there are lower mountains and wooded hills ; and between the Orinoco and the northern ranges there are the llanos, extensive plains sloping down from an elevation of 800 feet to the river. In the west the plain produces forests, and in the east, near Bolivar, there is a typical desert, with drifts of sand and barren hills. The Andes enter the country in the north-west and push north-eastward, where, as the Cordillera de Merida, they reach a height of 15,400 feet. Lake Maracaibo is in the depressed area between two ranges of mountains in the north. This shallow, brackish lake is closed by a bar, which prevents the entrance of large vessels, and its area is decreasing as its margin is being gradually silted up.

## Climate and Productions.

The climate is moist and the temperature varies from freezing-point above the snow-line to great heat in the coast-towns, valleys, and llanos. The eastern coast is subject to immoderate rainfall, but parts of the llanos are liable to severe drought.

The staple product is coffee, but cacao, cotton, tobacco, sugar, and other tropical products are grown. The best coffee is grown at an altitude of 2000 to 5000 feet, while the cacao is grown on the low grounds. Gold and copper are important minerals, and great supplies of coal and petroleum are obtained near Lake Maracaibo. The llanos are devoted to cattle and horse-rearing, and the llaneros, or people of the llanos, live chiefly by cattle-breeding, which is almost their only occupation.

## Communications, People, and Towns.

The Orinoco and its tributaries afford the chief means of communication. The railways are not extensive ; a railway connects Caracas with La Guaira and Valencia.

The population of about 2,800,000 consists of Indians, negroes, Spaniards, and other white people. Like most other South American states, the language of the country is Spanish, and the Roman Catholic religion prevails. The country was settled by Spaniards in the 16th and 17th centuries, but gained its independence in 1821. The government is by no means stable, and there have been frequent revolutions and political changes.

*Caracas*, the capital, has suffered from earthquakes, but is now a well-built modern town with a large population. *La Guaira* is the chief port, and *Valencia* is in the midst of the rich coffee-growing district. Other towns of importance are *Maracaibo*, the chief port of the west, and *Audad Bolivar* on the Orinoco, which is accessible to sea-going vessels.

*Just a few miles from the city of Caracas*  
*the life is a different one from that of the city*  
*and all the people are very happy*

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# QUESTIONS AND EXERCISES

## CHAPTER I. THE SHAPE AND SIZE OF THE EARTH

1. Give some proofs to show that the surface of the sea is not flat, but curved.
2. Distinguish between the rotation and the revolution of the earth.
3. Explain what is meant by pole, parallel of latitude, tropic.
4. When it is noon at Greenwich what time is it approximately at Dublin, Petrograd, Sydney?
5. Describe the observations which you would make to determine the latitude and longitude of a place.
6. Give the approximate latitude and longitude of the place where you live.

## CHAPTER II. THE SEASONS

1. Why is the altitude of the sun at mid-day in the northern hemisphere greater in summer than in winter?
2. Explain why at certain seasons of the year the sun rises almost due east, while at other seasons it rises either north or south of east.
3. Give a short explanation of the following terms: Tropics of Cancer and Capricorn, equinox, solstice, refraction, twilight.
4. Explain clearly how the seasons are produced.

## CHAPTER III. MAPS AND SURVEYING

1. Explain the process by which a good map is made.
2. What is a plane table? How is it used?
3. What is understood by these terms: mean sea-level, bench mark, contours, hill shading?
4. What is meant by the scale of a map?
5. Name the various methods of denoting compass bearings and say which is the most simple and convenient.

## CHAPTER IV. MAP PROJECTIONS

1. What is meant by map projection?
2. Name some of the ways of constructing map projections.
3. Draw a diagram of a conical projection.
4. What are topographical maps? How are they constructed in England and in Scotland?

## CHAPTER V. LAND AND WATER

1. Explain coral reef, desert, isthmus, monsoon, trade winds, geyser.
2. Describe the structure of two typical volcanoes and give an account of the phenomena observed during their eruptions.
3. What are the different stages in the formation of a river valley?
4. Describe and account for the position of three of the most important deserts in the world.
5. In what regions of the world are salt lakes found? Describe the characteristics of those regions.
6. Describe an estuary, an oasis, and a watershed. Give an example of each.
7. Explain concisely what is meant by atoll, bight, fjord, lagoon, cyclone.
8. How do you account for the saltiness of the sea?
9. Mention some of the results relating to the measurement of the depth of the sea.
10. Write a short essay on the tides.

## CHAPTER VI. CLIMATE AND THE DISTRIBUTION OF LIFE

1. Distinguish between isobars and isotherms.
2. How are weather charts constructed?
3. Why is the problem of forecasting weather one of much difficulty?
4. Explain the difference between a cyclone and an anti-cyclone. What kind of weather is associated with each?

5. Name and locate the barren zones on the earth's surface.
6. Give some resemblances between the fauna of America, of Asia, and of Europe.
7. What factors determine man's distribution on the earth?
8. What are the beasts of burden in (1) Europe, (2) Asia, (3) Africa?
9. Write a few sentences on: caravan, coaling station, velt, "trades," "roaring forties."

## CHAPTER VII. EUROPE

1. Give some figures to show the extent of Europe. What is the origin of the word "Europe"?
2. Locate the three groups of European volcanoes, and name the districts where there are extinct volcanoes.
3. Where are the following lakes: Como, Balaton, Neagh, Wener? Briefly describe one of them.
4. Which of the European seas are tideless? Why?
5. Name the chief islands in the Mediterranean Sea.
6. What do you know about the distribution of the rainfall in Europe?
7. Read the section on the "Economic Resources of Europe," pp. 77 and 78, and then write a summary of it.
8. Where is the population of Europe (*a*) sparse, (*b*) dense? Account for the facts in each case.
9. What are the chief races of people in Europe and where is each found?
10. Mention in order the chief natural features in a coasting voyage from Bordeaux to Hamburg; also mention political divisions, towns, and anything of special interest.
11. Give the exact position and account for the importance of Brindisi, the Kiel Canal, Malta, Metz, Pola.
12. Give some account of the Black Earth Region, the Karst, the Landes, the Mer de Glace, the Riviera, the Tirol.
13. Contrast the climates of Glasgow and Moscow as regards (*a*) summer temperature, (*b*) winter temperature, (*c*) rainfall, accounting for the differences that are found.

14. What is the latitude of Moscow, and what is the time there when it is noon at Greenwich?

15. Draw a sketch-map of the North Sea coast-line from Pentland Firth to Dover, and from Calais to the Skaw. Name and mark the positions of Buchan Ness, the Dogger Bank, the Frisian Islands, the Goodwin Sands, Calais, Harwich, Heligoland.

16. Describe the nature of the country traversed by the Danube. What makes this river important? Name four large towns on its banks and give an account of their industries.

### THE BRITISH ISLES

1. How has the position of Britain enabled it to become a great world power?

2. Draw a diagram to show the comparative sizes of the countries forming the British Isles.

3. Describe the physical features of Ireland.

4. Where is the Fen District? Write a few sentences about it.

5. Contrast the coasts on the east and west of England, and name some of the best natural harbours on its south coast.

6. Study the rainfall maps of the British Isles on p. 93, and then write out what you have learnt from them.

7. Name some of the wild animals that live in the British Isles and state where they are found.

8. What do you know of the fisheries of the British Isles? In which rivers is the salmon caught?

9. Where are hops, flax, apples, pears, and potatoes grown in Great Britain and Ireland?

10. Draw the map on p. 99 showing the coalfields of Britain.

11. Where are the following minerals found: rock salt, china clay, fuller's earth, jet, zinc, peat?

12. Draw a diagram to show the comparative populations of each country in the British Isles.

13. Name the chief religions professed in each part of the British Isles.

14. What are the universities in (a) England, (b) Wales, (c) Scotland, (d) Ireland?

15. Where are the following articles made: glass, boots, cider, cheese, mustard, and biscuits?

16. When and why were canals constructed in our country? Name the chief canals and give their positions.

17. What are the chief imports and exports of Britain? What is meant by entrepôt trade?

18. Where are the following seaports and for what are they famous: Rosyth, Cardiff, Moville, Queenstown, Leith?

19. How many towns in the British Isles have a population of over (a) 50,000, (b) 100,000? How do you account for so large a proportion of the population living in towns?

20. Read carefully the section on the "Origin of British Towns" on p. 126, and then write a summary of it from memory.

21. Account for the decline in each case of Poole, Wells, Hythe, and Walsingham.

22. Draw a sketch-map of the Channel Islands showing their position with regard to (a) France, (b) England.

23. Describe the position and state what you know of Canterbury, Glasgow, Fishguard, Hanley, Sheffield, Leith.

24. From what countries does Britain obtain its chief supplies of wine, currants, timber, marble, petroleum, silver?

25. Give a short description of Ulster and name and give the position of two of its principal towns, stating in what their importance consists.

26. Give accurately the position and describe the importance of: the Dogger Bank, the Fens, the Humber, the Potteries, the Rhondda Valley.

27. The average January temperature of the Orkneys is about the same as that of the Isle of Wight. What explanation can you offer?

28. Name for each of the following one article exported from it to Britain: (a) Egypt, (b) China, (c) Sweden, (d) New Zealand, (e) Ceylon, (f) Cuba.

29. Mention one place in the British Isles noted for the manufacture of (a) carpets, (b) leather, (c) linen, and

describe how the manufacture came to be associated with each place.

30. Give the position and state anything you know of Chesil Bank, the Weald, Strathmore, Menai Strait.

31. The mean annual rainfall of Cambridge is about 25 inches, of Cardigan more than 40 inches. Both towns are situated about  $52^{\circ}$  N. Lat. Account for the difference.

### FRANCE

1. What are the facts relating to the extent of France in (a) Europe, (b) Asia, (c) Africa?

2. Where are Brittany, the Riviera, the Auvergne, the Cotentin peninsula?

3. Compare the climate of France with that of England.

4. Where are the vine, olive, and mulberry trees grown in France? Name the wine-producing districts.

5. Make a list of the chief industries of France and state where each is carried on.

6. On an outline map of France mark the chief railway lines.

7. What do you know of the history of France during the last 50 years?

8. Where are the following towns and for what are they famous: Reims, Dunkirk, Cherbourg, Strassburg, Dieppe?

9. Draw a map of Corsica and show its position with regard to (a) France, (b) Italy.

10. Compare the density to the square mile of the French population with that of the British.

### BELGIUM

1. Describe the surface and general features of Belgium.

2. What are the chief minerals of Belgium, and where are they found?

3. Why have many Belgian towns a Flemish as well as a French name?

4. When and why were Belgium and Holland separated?

5. Account for the importance of Antwerp and Ostend, and mention with what English ports they trade.

6. Name six large towns in Belgium and describe three of them.

### HOLLAND

1. What is the official name of Holland? What is its extent?

2. What do you know of the dykes and canals of Holland?

3. Where are the Zuider Zee and the Dollart Zee? How were they formed?

4. What are the chief occupations of the Dutch?

5. With what countries does Holland trade? What articles are exported?

6. Write a few notes about Amsterdam, Flushing, The Hague, Delft.

### GERMANY

1. What was the extent of Germany (*a*) before, (*b*) after the Great War?

2. Name the most important mountains of Germany, and the two highest peaks.

3. Where is the "Kaiser Wilhelm Canal"? Why was it constructed, and what is the provision of the Treaty of Versailles with regard to its future use?

4. Contrast the lakes of Germany in the south and in the north.

5. What are the wild animals found in Germany?

6. Where are potatoes, wheat, sugar-beet, flax, the vine, grown in Germany?

7. Compare the population of Germany with that of France, as regards the density to the square mile and the rate of increase.

8. What industries are associated with Hamburg, Bavaria, Saxony, Nuremburg, Munich?

9. When was the German Empire formed? When did Germany become a Republic?

10. For what are the following towns famous: Leipzig, Cologne, Kiel, Danzig, Chemnitz?

DENMARK

1. What do you know of the recent history of Sleswig and Holstein?
2. Draw a map of Denmark, name the islands, and show the position of Sweden and Norway.
3. "Denmark is essentially an agricultural country." Explain and illustrate this statement.
4. When did Denmark cease to rule Sweden, Norway, and Iceland?

SCANDINAVIA

1. What is meant by Scandinavia? Give some facts relating to its extent.
2. Describe the coasts of (a) Norway, (b) Sweden.
3. Name the chief rivers of Scandinavia and discuss their value for purposes of navigation.
4. Compare the climate of Norway and Sweden.
5. What are the chief resources of Norway? Why is ship-building an important industry?
6. When and why did Norway separate from Sweden?
7. Write a few notes on the Maelström, Upsala, Goteborg, Hammerfest, Malmo.
8. Show how the differences of country influence the lives and occupations of the Norwegians and Swedes.

RUSSIA

1. What changes have taken place in the government of Russia since the Great War? Name any states that have been formed from this country.
2. What are the characteristics of the Russian rivers? Draw a map of the Volga and mark six towns on its banks.
3. "The climate of Russia is continental." Explain this statement.
4. Why is agriculture the chief occupation of the Russians? Where are the industrial centres?
5. Where are the following towns and for what are they famous: Odessa, Sebastopol, Archangel, Astrakhan, Baku, Riga?

## FINLAND

1. Describe briefly the surface and extent of Finland.
2. What are the manufactures and exports of Finland?
3. When was Finland joined to Russia? When did it become a republic?
4. Name three of the chief towns in Finland and write a few notes on each.

## AUSTRIA AND HUNGARY

1. Compare the extent of these states before and after the Great War.
2. Write a few notes on the Fata Morgana, the Föhn, Lake Balaton.
3. Give some account of the mineral resources of Austria and Hungary.
4. Name the chief Austrian tunnels through the Alps and show their advantages for purposes of travel.
5. Name the capitals of these two states and describe their position and characteristics.
6. Why are there so few large towns on the Danube below Budapest?

## POLAND

1. What is the extent of Poland, and what are the neighbouring states?
2. Write a few notes on the history of Poland? When was its independence acknowledged?
3. Mention three of the largest towns of Poland, and write a few sentences about the capital.

## CZECHO-SLOVAKIA

1. What are the states that are comprised in this country?
2. Give some account of the population of this country, specially with reference to race and religion.
3. Describe the position and importance of Prague, Bono, Olmütz.

## RUMANIA

1. Draw an outline map of Rumania, and on it mark the chief divisions.

2. Describe the course of the Danube through Rumania, and give some notes on the Dobruja.
3. Trace the development of Rumania since 1878.
4. Write a few sentences about Bukharest, Jassy, Galatz.

### THE BALKAN PENINSULA

1. What are the states within this region? What is their extent?
2. Write a short account of the climate and show how it affects the products of this area.
3. Give some account of the character of the communications in the Balkan Peninsula.
4. Read the section on p. 189 on the Geographical Character of Greece, and then write the substance of it from memory.
5. Describe the position and importance of Athens, Corinth, Patras, Constantinople, Salonika.

### SWITZERLAND

1. What are some of the groups in the Alpine system? Name the chief peaks with their heights.
2. Describe the rivers and lakes of Switzerland.
3. Mention some of the Swiss industries and say where they are carried on.
4. Write a few notes on the communications and trade of Switzerland.

### ITALY

1. What is the extent of Italy? Name its possessions in Africa.
2. On an outline map of Italy mark the Alps, the Apennines, and four peaks.
3. Give a full account of the productions of Italy.
4. What do you know of the history of Italy since 1862?
5. By what tunnels do the various railway lines enter Italy from (a) France, (b) Switzerland, (c) Austria?
6. Describe the following towns and show their importance: Rome, Florence, Milan, Turin, Genoa, Palermo.

## THE IBERIAN PENINSULA

1. Give a short account of the position and extent of this region.
2. Draw a map of Spain and Portugal and mark on it the chief mountains and rivers.
3. Why is the climate of Madrid subject to extremes?
4. What are the chief agricultural and mineral productions of Spain and Portugal?
5. At what period of their history were Spain and Portugal flourishing? How do you account for their decadence?
6. Write a few lines about Gibraltar and discuss its importance.
7. Give the position of the following towns and describe their importance: Barcelona, Cadiz, Oporto, Santander, Seville.

## CHAPTER VIII. ASIA

1. "Asia is politically a dependency of Europe." Explain this statement.
2. Compare the extent of Asia with that of (a) Europe, (b) the World.
3. Name three great rivers of Asia. Describe the course of one of those rivers and say what you know of the character of the country through which it flows.
4. How do the seasonal winds affect the rainfall of Asia?
5. "The fauna of the north of Asia differs from that of the south." Explain and illustrate this statement.
6. Make some remarks on the population of Asia with reference to its (a) number, (b) distribution, (c) races.
7. Give as full a description as you can of either Ceylon or Java.
8. Describe the route of the Trans-Siberian railway, estimating its importance from (i) a strategic, (ii) an economic point of view.
9. State carefully the position of the following towns, and explain how far each owes its importance to its position: Aleppo, Kandahar, Port Arthur, Singapore, Batavia.

SIBERIA, TRANSCAUCASIA, AND TURKESTAN

1. On an outline map of Asia mark the boundaries and capitals of these regions.
2. Name the domestic animals of each region and the economic products.
3. Show by diagrams the comparative extent and population of each region.
4. What great obstacle was met with in constructing the Trans-Siberian railway and how was the difficulty overcome?
5. Name the chief towns on the Trans-Caspian railway. How has this line promoted the development of this part of Asia?
6. Locate and describe: Tobolsk, Samarkand, Merv, Khiva, Baku, Kars.

THE EMPIRE OF JAPAN

1. What are the islands that belong to Japan? Describe one of them.
2. Compare and contrast Japan with the British Isles.
3. Describe the climate of Japan. Explain briefly the causes or conditions which determine its climate.
4. Write an interesting account of the vegetation of Japan.
5. What are the most important events in the recent history of Japan?
6. Name four of the largest towns in Japan, and explain their importance.

CHINA

1. What are the countries comprised in China? Compare the area and population of China with that of the British Empire.
2. Draw a map of China Proper to illustrate the means of internal communication by water and by rail. Mark and name at least six great towns that are served by these connexions.
3. Explain the statement: "The Hoang-ho is well named 'China's Sorrow.'"

4. What are the characteristics of the climate of China? Give a few facts relating to the temperature and rainfall.

5. State carefully the position of each of these towns and say how each town owes its importance to its position: Peking, Shanghai, Canton, Maimachin, Kashgar, Lhasa.

6. Read the paragraph about "Hong-Kong" on p. 235, and then write a summary of it.

### SOUTH-EAST ASIA

1. Name the parts of South-east Asia that belong to (a) Britain, (b) France, (c) Holland, (d) United States.

2. Distinguish between the (a) people, (b) flora, (c) fauna east and west of "Wallace's Line."

3. Where are the following and for what are they noted: Krakatau, Saigon, Manila, Macassar, Batavia, Singapore?

### INDIA

1. "India is a continent rather than a country." Discuss as fully as you can the truth of this statement.

2. What districts of India would be submerged if the sea were to rise 1000 feet? Illustrate your answer by a sketch-map.

3. Describe fully the monsoons, showing their effect on the fertility of India.

4. How does the physical formation of India affect its climate?

5. "India is essentially an agricultural country." Explain this statement.

6. Write some notes on the population of India, showing its (a) distribution, (b) density.

7. Describe the land routes into India, and explain what helps and what hinders the construction of railways.

8. On an outline map of India mark and name the British Provinces and their capitals.

*(1) India provinces are many provinces not  
permanents; AFGHANISTAN Discuss.*

1. "The boundary of Afghanistan should be drawn in crimson, for blood has been lavishly shed to mark it out." Explain this statement by reference to some facts.

2. Give an account of the Khaibar Pass, with special reference to its importance.

3. What is the present relation of Afghanistan to India? What is the government of the country?

### PERSIA

1. Describe the rivers of Persia and account for their characteristics.

2. How is Persia governed? Write a few sentences about the people and their occupations.

3. Where are the following towns and for what are they famous: Teheran, Ispahan, Shiraz, Bushire?

### SOUTH-WEST ASIA

1. Describe the physical features of Asia Minor.

2. State the chief political changes brought about in this region by the Treaty of Versailles, 1919.

3. Explain Cilician Gates, El Ghor, Vali, Caliphs.

4. What do you know of the climate and productions of Arabia?

5. Where are the following and for what are they noted: Smyrna, Angora, Bagdad, Damascus, Mocha, Aden?

## CHAPTER IX. AFRICA

1. Mention two of the important rivers of Africa. State what you know of each and of the country through which each flows.

2. Account for the desert regions of Africa.

3. What do you know about the animals and the plants which are characteristic of Africa?

4. Describe the following, stating in what parts of Africa examples of each may be found: kloof, oasis, shott, sudd.

5. It has been said that when the difficulties of its climate and its germ diseases are better understood and overcome, Africa may turn out to be the richest continent in the world. Explain the difficulties alluded to in this statement and mention five of the chief productions of Africa.

6. In the case of each of the following (i) indicate as exactly as you can its position, (ii) name the power which controls it, (iii) state the nature of its climate, (iv) state the principal export: Congo State, Senegal, Zanzibar, Morocco, Libya.

7. Mention four sea-ports in Africa. State the position of each and why it is important.

8. Describe a journey from London to Alexandria, either by sea or by the overland route.

9. Name, in order of size, the principal African islands. State to whom they respectively belong and show the value and the interest attaching to any four of them.

### THE BARBARY STATES AND THE SAHARA

1. What is meant by the statement that the Sahara and not the Mediterranean Sea separates Europe from Africa? Support this statement by reference to the climate of Mediterranean Africa.

2. Name the Barbary States and state to which European country each state belongs.

3. Locate and describe the following towns: Fez, Tangier, Biskra, Bizerta, Murzuk.

4. Give some account of the vegetable productions of the Barbary States.

5. Explain Sahara, Wadi, Simoom, Alfa

### EGYPT AND THE NILE BASIN

1. Give a description of the basin of the Nile and illustrate with a map showing the chief tributaries and towns.

2. How would you account for the increased prosperity of Egypt during recent years?

3. Explain how far Alexandria, Cairo, and Khartum owe their importance to their position on the Nile.

4. Describe briefly the nature of the country crossed by the railway from Mombasa to the Victoria Nyanza.

5. What time is it at Cairo when it is noon at Greenwich? Account for the difference.

BRITISH AFRICA

1. Give a short account of the physical geography of the Cape of Good Hope.
2. What do you know of the mineral wealth of British South Africa?
3. Where are the following and for what are they noted: Simonstown, Kimberley, Johannesburg, Victoria Falls, Blantyre, the Great Karroo?
4. Enumerate and describe the position of the British possessions and protectorates in Africa (excluding the islands).
5. Explain what is meant by the Gold Coast, the Hausas, the Oil Rivers, the Sudan.
6. Write brief notes on the geographical position and importance of the following: Bulawayo, Uganda, Walfish Bay, Kilimanjaro, Sokotra.
7. Give a short account of Livingstone's work as an explorer in the Zambesi and Lake Nyasa regions.
8. What additions were made after the Great War to British possessions in Africa?

FRENCH, PORTUGUESE, AND BELGIAN AFRICA

1. Make a diagram to show the comparative areas of Africa possessed by the various European powers.
2. What is the Guinea current?
3. State what you know of the Congo. Give its source, course, chief tributaries, and any impediments to its navigation.
4. Name the chief possessions of Portugal in Africa. State their position and relative importance.
5. What do you know of the French possessions in West Africa?
6. What is the extent of the French Sahara and what is its value?
7. Describe the island of Madagascar and by means of a rough sketch-map show its relation to the mainland.

CHAPTER X. AUSTRALIA, NEW ZEALAND,  
AND THE PACIFIC ISLANDS

## AUSTRALIA

1. Describe the interior of Australia. What effect has a heavy rainfall on it?
2. Give as completely as possible the reasons for the existence of the river Murray and the Great Stony Desert of South Australia.
3. What are the most striking features in the river system and coast-line of Australia?
4. What are the "Roaring Forties"? Explain how they are caused and how they assist navigation to and from Australia.
5. Contrast the climates of the Cape York Peninsula and the island of Tasmania, explaining in both cases the causes of the climate.
6. State in what districts of Australia cattle and sheep are reared, and corn and sugar produced. Give reasons for your answer.
7. Name the principal localities in Australia where the following minerals are found: coal, copper, gold, silver, tin.
8. What are the principal occupations of the people in different parts of Australia? Why is a large part of Australia thinly populated?
9. Of what races does the present population of Australia consist? How do you account for their presence there?
10. Enumerate the states of Australia, with the capital of each. Draw a rough map showing their position, and mark the Torrid Zone.
11. Give an account of the vegetable, animal, and mineral products of Queensland, and mention physical or political circumstances which have affected the progress of the country.
12. Describe the position, nature, and importance of five of the following: Brisbane, Fremantle, Mount Morgan, Port Jackson, Port Moresby, Wimmera, Canberra.

### NEW ZEALAND

1. "New Zealand is the Japan of the South Pacific." Explain this statement.
2. Describe the chief physical features of New Zealand.
3. Give some account of the plants and animals of New Zealand.
4. Write what you know about the Maoris.
5. Contrast the distribution of the population in New Zealand and Australia.
6. Locate and describe the four chief cities of New Zealand.

### THE PACIFIC ISLANDS

1. Explain the names Melanesia and Polynesia, and mention the chief islands comprised in those groups.
2. Write an interesting account of New Guinea and show by a sketch-map its position with reference to Australia.
3. Mention the Pacific islands belonging to (a) Britain, (b) France, (c) United States, (d) Japan.
4. What do you know of Easter Island, Pitcairn Island, Juan Fernandez?

## CHAPTER XI. NORTH AMERICA

1. Describe the Cordilleran or Pacific mountain system of North America and also the general character of the rivers of the Pacific slope.
2. Why is the Pacific coast north of the Columbia river so different in character from the coast south of that river?
3. Which districts in North America suffer from a deficiency of rainfall? Indicate their positions and account for the smallness of the rainfall of each.
4. Name the most important vegetable productions which are exported from North America and state in what part each is grown in large quantities.
5. Where are the great plains in North America? What rivers flow through them? What are the principal vegetable products of these valleys?

6. In what parts of North America are people of French and Spanish descent found? How do you account for their presence?

7. In what parts of North America are the following chiefly found: coal, copper, petroleum, timber, cattle, sheep?

### CANADA AND NEWFOUNDLAND

1. What is meant by the Dominion of Canada? Give its extent.

2. Account for the variations of climate in different parts of Canada.

3. Name the principal localities in Canada from which (1) timber, (2) wheat are obtained.

4. Give as full a description as you can of Newfoundland.

5. Give an account of the mineral resources of the St Lawrence Basin. Mention the most important manufacturing industries, districts, and towns in this territory. Illustrate your answer by a sketch-map.

6. Describe a journey from Canada to Liverpool.

7. Trace the course of the Canadian Pacific Railway. Give a rough sketch-map and show the position of the chief stations on its route.

8. How do you account for (a) the large rainfall in British Columbia, (b) the fogs off the banks of Newfoundland?

9. What is the effect of the great lakes on the climate of Canada?

10. State carefully the position of the following towns: Halifax, Quebec, Winnipeg, New Westminster. Explain how far each owes its importance to its position.

### UNITED STATES

1. Describe the frontier of the United States.

2. Describe fully the waterway leading from New York to Lake Superior, and give some account of the trade carried on by means of it.

3. Give an account of the Arid Region of the United States, the reasons why it is arid, its position, extent, most striking features, and chief products.

4. What do you know of the distribution of the population in the United States? Where do Negroes, Chinese, and Japanese live in the United States?

5. State carefully the position of the following towns and explain how far each owes its importance to its position: New Orleans, Philadelphia, New York, Boston, Chicago, San Francisco.

6. Name the foreign possessions of the United States and state how they were acquired.

### MEXICO, CENTRAL AMERICA, AND THE WEST INDIES

1. How is the climate of Mexico determined? How do you account for the decrease of its rainfall?

2. Write a few notes on the following towns: Vera Cruz, Puebla, Acapulco, Tampico.

3. Describe as fully as you can Jamaica.

4. In the case of each of the following: Cuba, Haiti, Martinique, Nicaragua, indicate (i) its position, (ii) name the power which controls it, (iii) name one chief town, (iv) state the principal export.

5. Why are the West Indies so named, to whom do they belong, which are most thickly peopled, and what are the chief products of the principal islands?

6. Give an interesting account of the Panama Canal.

7. Name the states comprised in Central America and give the capital in each case.

8. What do you know about Trinidad? Draw a sketch-map to show its position in relation to the mainland.

### CHAPTER XII. SOUTH AMERICA

1. In what ways is commerce helped or hindered by natural peculiarities in South America? Illustrate your statements by reference to some country.

2. How does the west coast of South America south of lat.  $4^{\circ}$  S. differ from that farther north?

3. Write a short essay on the Amazon.

4. Explain the following terms: cordilleras, selvas, pampas,

Llanos.

5. Define the position and state what you know of the following: El Gran Chaco, Galapagos, Port Stanley, the Great Shingle Desert, Titicaca.

6. What are the llamas and what are the llanos of South America?

✓7. State carefully the position of the following towns: Rio de Janeiro, Iquique, Montevideo, Belize, Quito, Cayenne, and explain the special importance of each, as far as you can by reference to its position.

8. Of what races is the population of South America chiefly composed? What is the prevailing form of government in the various countries?

9. State the position and special interest of these places: Cuzco, Para, Paysandu.

10. Name three South American states which have shown the most marked development in trade and population. Mention any geographical reasons for this superiority. Describe the resources and industries of one of these states.

✓11. From what parts of South America does Britain import (a) mahogany, (b) nitrates, (c) rubber, (d) sugar, (e) wheat, (f) quinine?

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